

Changing Land Use in Terrebonne County, Québec

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Résumé de l'article

Le comté de Terrebonne, situé directement au nord-ouest de la ville de Montréal, enjambe la zone de contact entre les basses terres du Saint-Laurent et le plateau accidenté des Laurentides. Dans la zone des basses terres s'étendent de vastes superficies de sols argileux fertiles dont la plus grande partie fut colonisée pour des fins agricoles dès le début du XIX^e siècle. La terre arable de qualité est beaucoup plus rare sur les hautes terres du plateau. Seules les grandes vallées fluviales, particulièrement celles des rivières du Nord et du Diable, en rassemblent des étendues de quelque importance. Ces sols fertiles de vallée furent défrichés et convertis à l'agriculture tout au début de l'occupation du territoire. Quant aux parties du plateau offrant le moins d'intérêt, parce que dotées d'un relief assez rude, de sols sablonneux et d'une courte saison de croissance, elles firent également l'objet, durant la deuxième moitié du XIX^e siècle, d'une colonisation vigoureuse sous l'impulsion de l'Eglise et de l'Etat. Les terres défrichées, généralement tout au plus propres à la culture de foin de médiocre qualité et au pâturage des moutons, furent progressivement abandonnées : vers la fin des années 30, la plus grande partie de ces terres étaient en voie d'être réoccupées par la forêt.

Durant le dernier demi-siècle, et surtout depuis les années de la seconde guerre mondiale, le comté de Terrebonne s'est considérablement urbanisé. Alors que le plateau s'équipe rapidement de facilités pour la pratique des sports d'été et d'hiver et transforme son habitat villageois en des centres de services pour le tourisme, dans la plaine ont surgi, le long de la rivière des Milles Isles, de nombreuses « villes-dortoirs » où s'écoule le trop-plein de la main-d'oeuvre montréalaise. Ces changements ont transformé l'agriculture du comté : les superficies de terres cultivées ont diminué de 60% depuis 1921 dans l'ensemble du comté tandis que l'exploitation agricole est presque complètement disparue des Laurentides depuis la même époque.

CHANGING LAND USE IN TERREBONNE COUNTY, QUÉBEC

by

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RÉSUMÉ

Le comté de Terrebonne, situé directement au nord-ouest de la ville de Montréal, enjambe la zone de contact entre les basses terres du Saint-Laurent et le plateau accidenté des Laurentides. Dans la zone des basses terres s'étendent de vastes superficies de sols argileux fertiles dont la plus grande partie fut colonisée pour des fins agricoles dès le début du XIX^e siècle. La terre arable de qualité est beaucoup plus rare sur les hautes terres du plateau. Seules les grandes vallées fluviales, particulièrement celles des rivières du Nord et du Diable, en rassemblent des étendues de quelque importance. Ces sols fertiles de vallée furent défrichés et convertis à l'agriculture tout au début de l'occupation du territoire. Quant aux parties du plateau offrant le moins d'intérêt, parce que dotées d'un relief assez rude, de sols sablonneux et d'une courte saison de croissance, elles firent également l'objet, durant la deuxième moitié du XIX^e siècle, d'une colonisation vigoureuse sous l'impulsion de l'Eglise et de l'État. Les terres défrichées, généralement tout au plus propres à la culture de foin de médiocre qualité et au pâturage des moutons, furent progressivement abandonnées : vers la fin des années 30, la plus grande partie de ces terres étaient en voie d'être réoccupées par la forêt.

Durant le dernier demi-siècle, et surtout depuis les années de la seconde guerre mondiale, le comté de Terrebonne s'est considérablement urbanisé. Alors que le plateau s'équipe rapidement de facilités pour la pratique des sports d'été et d'hiver et transforme son habitat villageois en des centres de services pour le tourisme, dans la plaine ont surgi, le long de la rivière des Milles Isles, de nombreuses « villes-dortoirs » où s'écoule le trop-plein de la main-d'œuvre montréalaise. Ces changements ont transformé l'agriculture du comté : les superficies de terres cultivées ont diminué de 60% depuis 1921 dans l'ensemble du comté tandis que l'exploitation agricole est presque complètement disparue des Laurentides depuis la même époque.

The county of Terrebonne, from the viewpoint of the geographer at least, is one of the best-studied « small areas » of the province of Québec. A number of government reports have dealt in detail with the geology and soils of the county ;¹ problems of geomorphology, tourism, and land use have been

¹ OSBORNE, F. Fitz, *Sainte-Agathe - Saint-Jovite map area*. In Québec Bureau of Mines Annual Report, 1935, Part C, pp. 53-88.

OSBORNE, F. Fitz, and MCGERRIGLE, H. W., *Lachute map area*. In Québec Bureau of Mines Annual Report, 1936, Part C.

KLUGMAN, M. A., *Doncaster area*. Québec Department of Mines, Geological Report 94, 1960.

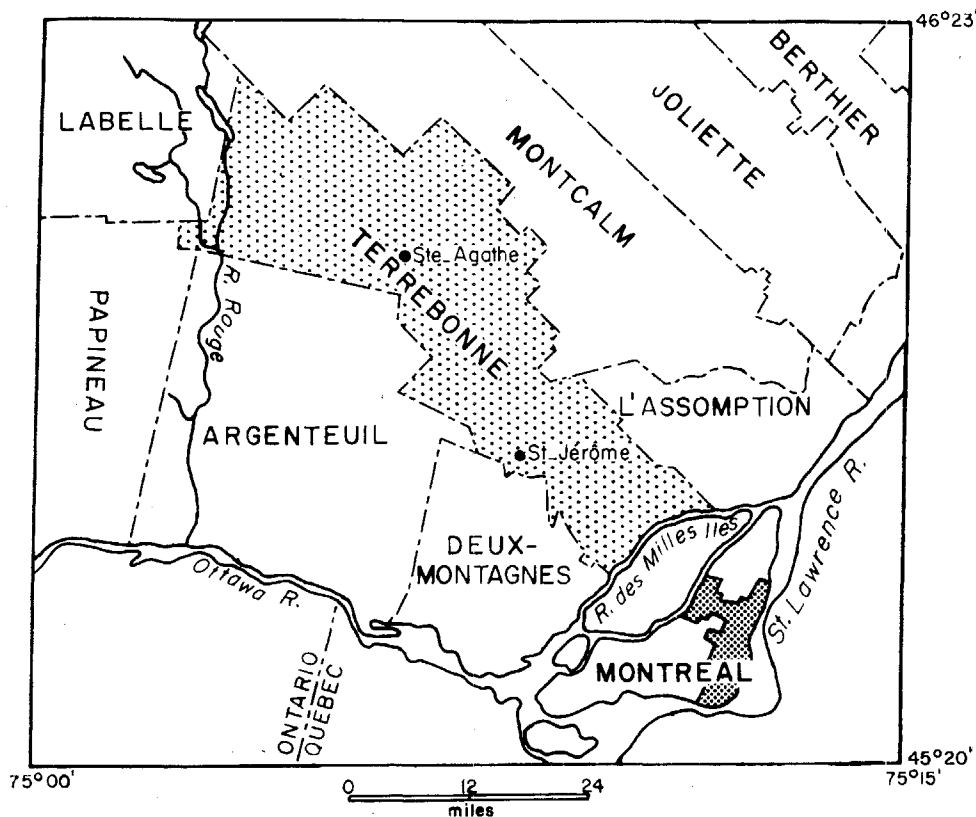
MCGERRIGLE, J. I., *Saint-Hippolyte area*. Québec Department of Mines, Preliminary Report 393, 1959.

MCGERRIGLE, J. I., *Sainte-Adèle area*. Québec Department of Mines, Preliminary Report 431, 1960.

MCGERRIGLE, J. I., *Desrosbois area*. Québec Department of Natural Resources, Preliminary Report 455, 1961.

LAJOIE, Paul-G., *Soil survey of Argenteuil, Two Mountains, and Terrebonne Counties*, Québec. Research Branch, Canada Department of Agriculture, 1960.

FIGURE I



Location map.

examined in several recently-submitted geography theses.² Two Laval University professors have studied the sociological structure of the entire southern portion of the county.³ And finally, a number of published papers treat detailed aspects of the glacial geomorphology and the biogeography of small sections of the area.⁴

Why such intensive study of a single county of the province? First, the area is situated immediately north of Montréal (Figure I) and is consequently very easy of access. Second, the area contains a great variety of rock types,

² PARRY, J. T., *The Laurentians: a study in geomorphological development*. Unpublished Ph. D. thesis in geography, McGill University, 1963.

VIAU, Robert, *Le tourisme dans les Laurentides*. Unpublished M. A. thesis in geography, Université de Montréal, 1957.

CLIBBON, Peter B., *The evolution and present pattern of land use in Terrebonne County, Québec*. M. A. thesis in geography, Université de Montréal, 1962.

³ DUMONT, F., and MARTIN, Y., *L'analyse des structures sociales régionales. Étude sociologique de la région de Saint-Jérôme*. P. U. L., 1963. Reviewed by Louis-Edmond Hamelin, in *Les Cahiers de géographie de Québec*, n° 15, 1964, pp. 123-125.

⁴ Note particularly the papers of Laverdière and Courtemanche on the glacial geomorphology of the Saint-Faustin - Saint-Jovite area.

unconsolidated materials, and soils. But for those who are examining the urban and agricultural geography of the area, there is another factor of extreme importance : for the last fifty years, the county has been in a constant state of transition. In 1910, Terrebonne was a typical county of rural Québec — longlot farms, subsistence agriculture, sleepy villages, dirt roads, small sawmills. The longlots remain, but everything else has changed. Agriculture has virtually disappeared from large sections of the county, and timber reserves are almost depleted. Hotels, motels, restaurants, summer cottages and ski cabins line the roads and lake fronts of the county. Most of the villages have become large, thoroughly commercialised tourist service centres. A network of paved roads spiders over the entire area, and a six lane autoroute extends half the length of the county. Terrebonne county is an area, then, in which many changes are taking place. And these changes are now taking place very rapidly. It thus seems worthwhile to examine the various processes which are bringing about these changes, and to study the greatly modified landscape which has resulted.

THE PHYSICAL SETTING

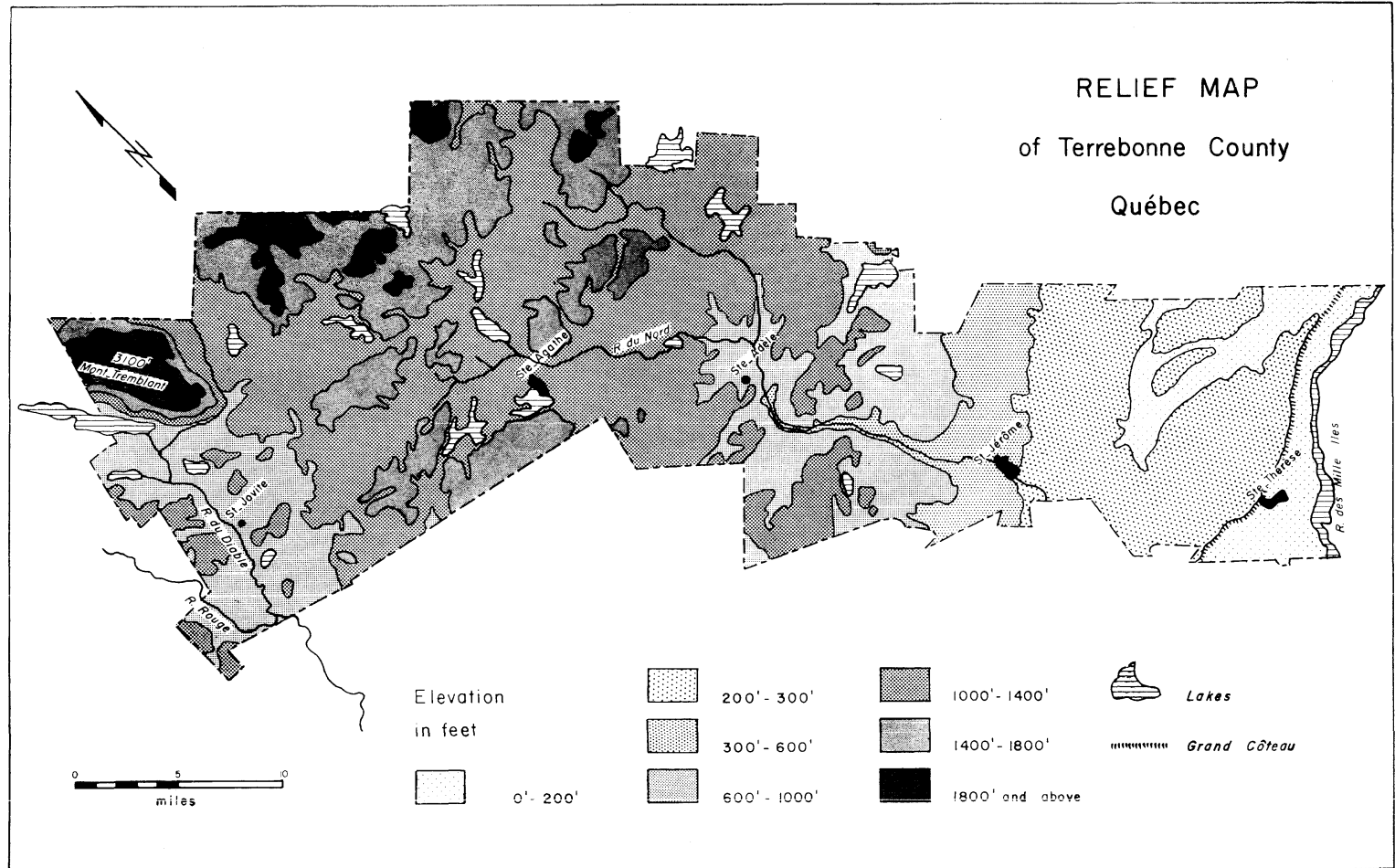
Geology and physiography

Terrebonne county straddles two of the major physiographic provinces of North America : the Saint Lawrence lowlands and the Laurentian upland. The lowland zone is underlain by flat-lying Ordovician limestones and dolomites, but a thick mantle of till, clay and alluvium blankets the bedrock in all but a few localities. The clays, deposited by the postglacial Champlain sea, form low-lying, virtually featureless plains which occupy 27 per cent of the region. In many areas, thick sand and gravel deposits of marine origin overlie the clays. Cut in all these unconsolidated materials are a number of well-defined marine terraces. The most prominent of these terraces is the Grand-Coteau, a ridge of 75' to 100' elevation which traverses the lowland at a distance of one to five miles from the Rivière des Milles Îles (Figure II).

The Laurentian upland lies approximately 13 miles north of the Rivière des Milles Îles, along a contact marked by the 300' contour line. There is no abrupt physiographic break between lowland and upland, but the contact is accented by an almost continuous front of forest. The upland is underlain by a complex of metasedimentary and metamorphic rocks of Precambrian age. An anorthosite massif occupies much of the northern and northeastern sections of the area. Over the entire upland, pronounced dissection along joints and other lines of structural weakness has resulted in a rugged, blocky landscape of steep slopes and cliffs. There is as much as 2,200' of local relief in some areas.

The highland surface is covered with a variety of deposits of Cenozoic age. Hill slopes are mantled with sandy tills whose depth over bedrock varies from a few inches to more than forty feet ; these deposits have considerably softened the rugged rock knob landscape. Localised on the lower slopes of hills and in the principal valleys of the area are sand and gravel deposits of fluvioglacial

FIGURE II



origin. These materials occur as outwash plains and kames, and are most extensive at elevations ranging from 800' to 1,600'.

The Rivière du Nord drains the eastern and northeastern sections of the upland region. From Saint-Jérôme to Sainte-Adèle, the valley is incised in thick marine, lacustrine and deltaic sediments associated with the Champlain sea epoch. The northwestern section of the upland is drained by the Rivière Rouge and its tributary, the Rivière du Diable. The area is characterised by wide river plains and by gently rolling upland surfaces. The rugged Mont Tremblant granite massif dominates the extreme northwestern section of the area.

Climate

Although the climate of Terrebonne county is cool and humid, the lowland area is slightly warmer and more snow-free than the upland (Table I).

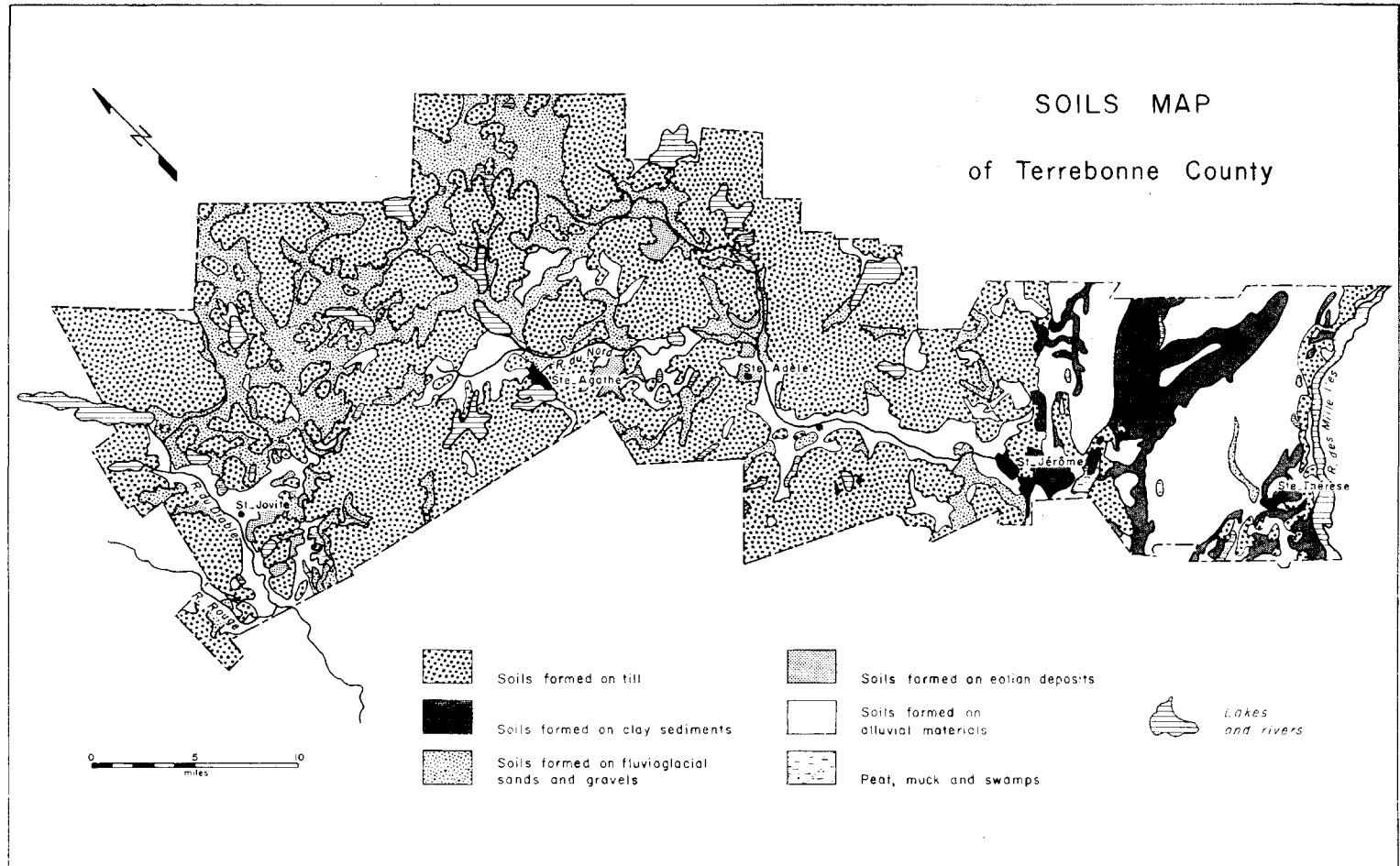
The mean annual temperature at Saint-Jérôme is 2.3°F. higher than at Sainte-Agathe, but the quantity of precipitation at both stations is the same.

TABLE I

TEMPERATURE AND PRECIPITATION SAINT-JÉRÔME AND SAINTE-AGATHE STATIONS ⁵		
<i>Temperature (degrees F.)</i>	SAINT-JÉRÔME (lowland zone)	SAINTE-AGATHE (upland zone)
Mean, November to April	21.5	20.1
Mean, May to October	58.2	55.2
Mean for year	39.8	37.5
Average frost-free period in days	125	122
<i>Precipitation (inches)</i>		
Total, November to April	21.5	21.3
Total, May to October	21.5	21.7
Total for year	43.0	43.0
Estimated annual snowfall	141	170

⁵ Compiled from *Monthly Record of Meteorological Observations*, Canada Dept. of Transport, Toronto, 1955; from *Climatic Summaries*, Vol. III, Dept. of Transport, 1956; and from *Meteorological Bulletin*, Québec Bureau of Statistics, Jan.-Dec., 1958. Compilation by P. Lajoie, *Soil Survey of Argenteuil, Two Mountains and Terrebonne counties*, Canada Dept. of Agriculture, 1960, pp. 14-15.

FIGURE III



However, there are other stations in the upland area which report up to 47.5" of precipitation, that is, almost 5" more than at Sainte-Agathe.

From December to March, nearly all the precipitation in the county falls as snow. In the upland area, the snowfall period may also include the last half of November and the early part of April. The snow cover generally remains for sixteen weeks at Sainte-Anne-des-Plaines (lowland), for eighteen to nineteen weeks in the Saint-Faustin - Saint-Jovite area, and for approximately twenty weeks at Sainte-Agathe, Sainte-Adèle and Saint-Sauveur ; the cover lasts even longer in the rugged Mont Tremblant area.

Soils (Figure III)

The soils of the lowland area have mainly formed on tills, on clay sediments, and on alluvial materials. *Till soils* are expressed by gently undulating to rolling topography ; they have good water retention capacity and are well-drained. Lime content is high. The till soils of the lowland are well adapted to general and to dairy farming, but they are also suitable to a wide variety of specialty crops, including vegetables, small fruits and tree fruits. *Soils on clay sediments* are generally expressed by level topography. Their water retention capacity is high, but excess water disappears slowly and large tracts must be artificially drained. These soils are generally well suited to general farming and to horticulture, but they do not offer favourable conditions for orcharding. *Soils on alluvial materials* underlie very large areas in the lowland zone. The soil profiles have developed on stone-free sand and silt deposits which overlie marine clays ; many of these soils are poorly drained because of this impermeable clay substratum. Lime and fertilizer are necessary before good crops can be produced.

The soils of the upland area of Terrebonne county have formed on tills, on eolian deposits, and on fluvio-glacial and alluvial materials. *Till soils* underlie most of the upland zone ; they occur mainly on rolling and mountainous land. Stones and boulders are abundant in the soil profiles and on the surface of the ground. Steep slopes, swampy depressions and numerous rock outcroppings are typical terrain characteristics of till areas. *Soils on eolian deposits* have formed on fine-grained, wind-deposited sands and silts. The deposits are generally found on hill slopes. They form a veneer of between one and three feet in thickness which is broken by boulders and rock outcroppings in many localities. The soils possess fair to good natural fertility, and have a favourable water retention capacity. They are well suited to general farming, horticulture and orcharding ; however, steep slopes must be kept in grass to guard against water erosion. *Soils on fluvio-glacial materials* have formed on extensive areas of outwash, and also on deltaic and kame deposits composed of poorly sorted to well-sorted gravels. The low water retention capacity and low natural fertility of these soils limit crop production ; grass vegetation is thin because the surface soil is too dry to support shallow-rooted plants. *Soils on alluvial materials* are found in the principal river and stream valleys of the upland area. Their profiles have developed on parent materials which range in texture from gravel

to silt. The soils vary greatly in their range of adaptability to agriculture, but good crops can be produced if the factors of fertility and moisture supply are artificially controlled.

*Vegetation*⁶

The forest cover of the lowland is predominantly deciduous, and is composed of sugar maple and beech, with red maple, yellow birch, white elm, basswood, white ash, largetooth aspen, and red and bur oaks. However, most of this forest has been completely cleared; largetooth aspen, white birch, balsam fir and white spruce form the dominant cover in the cut-over and burnt-over areas of the lowland.

The forest of the upland area is largely composed of upland tolerant hardwood stands. Mixed woods and softwoods are found in the valleys. The principal species are sugar maple, beech, yellow birch, red spruce, balsam fir, red maple and white birch; the swamp types consist of black spruce, eastern cedar and tamarack. Historically, the forest contained large white pine, and there are still scattered representatives of this species in the area.

THE EVOLUTION OF LAND USE IN TERREBONNE COUNTY

The lowland area

The seigneuries of Terrebonne and Mille Îles were established in the lowland zone of the county during the late xviith century (Figure IV). There was almost no settlement of these seigneuries until the 1720s, however, and by 1760 only the banks of the Rivière des Mille Îles were occupied, along with a few small inland areas. But around the turn of the century French-Canadian colonists began to move toward the interior, and by the 1830s the zone lying between the river and the Shield-edge was almost completely settled.

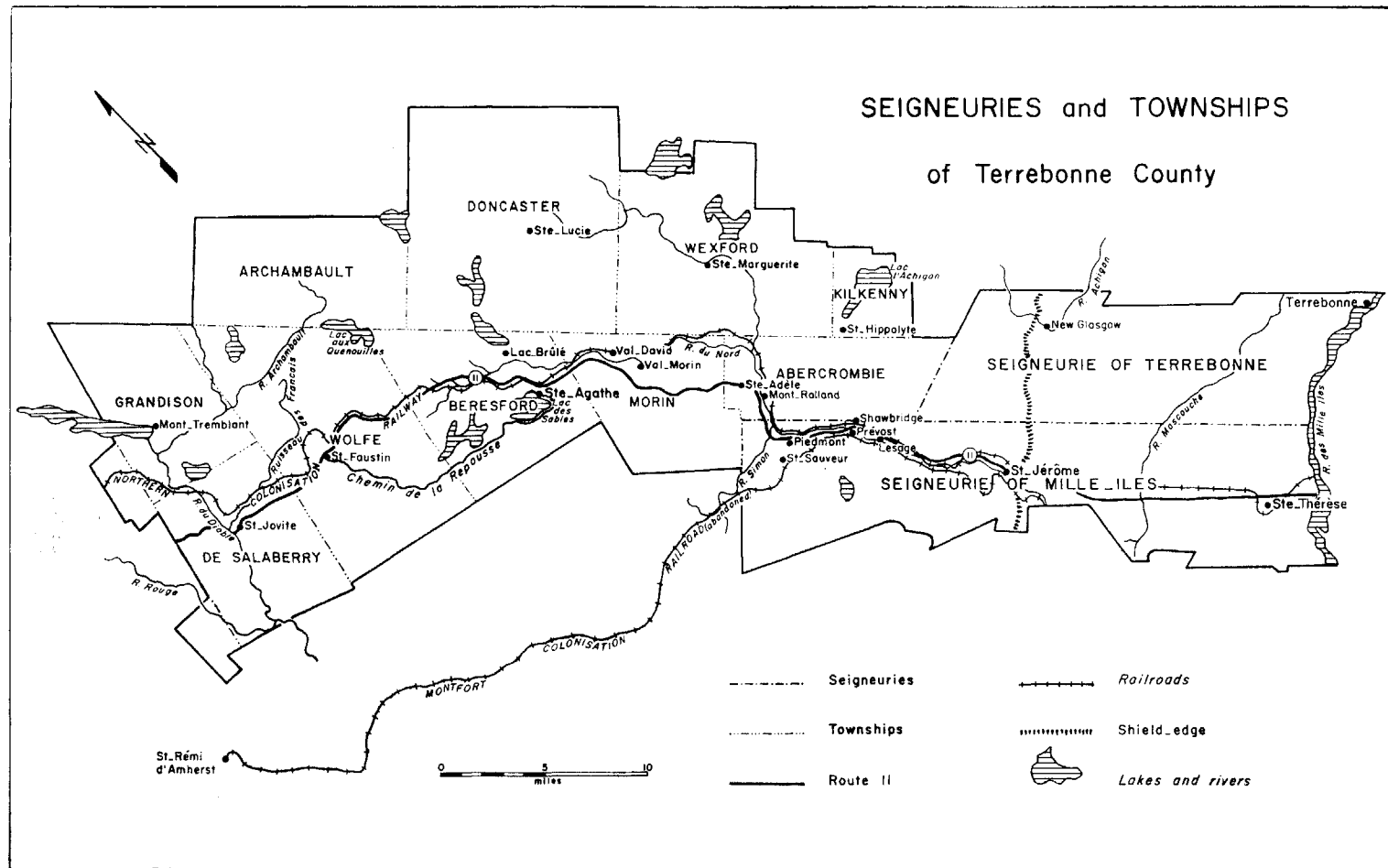
The economy of the lowland area was described as being flourishing and prosperous.⁷ The lowland was « extremely productive in wheat, barley and other grains », and gristmills dotted the banks of the Rivière Mascouche and the Rivière des Mille Îles. The mills of the village of Terrebonne were « without exception the most complete and best constructed of any in the country ». In 1815, the village contained 150 houses and was « a favoured spot where many gentlemen who have realised large fortunes in the Northwest Company fur trade retire to enjoy the comforts and luxuries of private life. It is also a place of some traffic, occasioned by the continued influx of persons bringing grain to the mills from distant parts, and by the large exports of flour that annually take place ».⁸

⁶ After J. S. ROWE, *Forest regions of Canada*, Bulletin 123, Forestry Branch, Canada Dept. of Northern Affairs and National Resources, 1959, pp. 45-48.

⁷ BOUCHETTE, Joseph, *A topographical description of the province of Lower Canada*. T. Davison, London, 1815, pp. 108-110.

⁸ *Ibid.*

FIGURE IV



The upland area

In the late xviiith century, the townships of Abercromby, Kilkenny, Morin, Wexford, Doncaster, Beresford, Wolfe, Grandison, and de Salaberry were erected on the Laurentian upland north of the Terrebonne and Milles Îles seigneuries (Figure IV). The township lands were intended for British settlers. However, because of the rugged nature of the terrain and the infertility of the soils, only a handful of English-speaking colonists were attracted to this area (mainly a few Scots and Irish in the valleys of the rivers Nord and Achigan), and many of the lots which were taken up were quickly abandoned.

In the lowland area, arable land in the furthest extensions of the seigneuries was almost all occupied by the 1830s, and many of the young French-Canadians of the lowland parishes were forced to search for new lands to colonise. A logical avenue for settlement was the broad valley of the Rivière du Nord, which penetrates the Shield area to the north of Saint-Jérôme. In 1840, colonists from the Saint-Jérôme and Terrebonne areas pushed up the valley to occupy lots near the tiny community of Shawbridge (established fourteen years earlier by Irish immigrants). Soils here are stone-free and moderately fertile, but progress of settlement was slow because of the lack of a colonisation road in the valley. However, by the 1850s the upland parish of Saint-Sauveur had been erected, and, farther to the north, settlers had carved out a number of large farm-estates in the Sainte-Adèle area. The largest of these farms covered 590 acres and contained flour mills and sawmills. In 1861, there were 1,633 French-Canadian colonists in the parish of Sainte-Adèle; the adjoining settlements of Sainte-Marguerite and Val-Morin were also growing rapidly. The government now undertook the construction of a cart track from Sainte-Adèle north to Lac des Sables in Beresford township; the new parish of Sainte-Agathe-des-Monts was founded in this area in 1861.

The priest Labelle, appointed curé of Saint-Jérôme in 1868, was in large measure responsible for the colonisation of the section of Terrebonne county northwest of Sainte-Agathe. Labelle personally supervised the construction of the *chemin de la Repousse* (Figure IV), which traversed the rugged anorthosite massif marking the water divide between the Rivière du Nord and the Rivière Rouge. In 1874, the curé led the first settlers over the difficult route, and at the road's end he founded the agricultural parish of Saint-Faustin. In 1882, the government constructed a more practicable road between Sainte-Agathe and Saint-Faustin — its trace is now marked by the roadbed of Route 11 — and a branch road for colonisation was opened from it to Lac aux Quenouilles in the north.

The white and red pine stands of the valley of the Rivière du Diable were lumbered during the late xixth century, and many settlers followed the « timber access roads » to occupy these cut-over lands. A handful of the settlers were Englishmen from Argenteuil county to the south (Figure I), but the majority were French-Canadians who arrived via the *chemin de la Repousse*. In 1879, the village of Saint-Jovite was established on the Rivière du Diable, and a flour mill, a carding mill and two sawmills were constructed on the Ruisseau

des Français, a tributary of the Diable. Saint-Jovite was destined to become an important lumbering and agricultural centre, for it was located at the junction of the roads from Montréal and from Grenville (on the Ottawa River). The village also served as a jumping-off place for colonists moving farther north up the Rouge and Lièvre river valleys.

The construction of railroads in the Laurentian sector of Terrebonne county helped to increase population in the area, and to encourage local industry and tourism. The Northern Colonisation Railway (Figure IV), which now forms part of the Canadian Pacific Railway system, was constructed from Montréal to Saint-Jérôme in 1876; curé Labelle's indefatigable efforts helped to promote its extension to Sainte-Agathe in the early 1890s.⁹ By 1909, there was rail communication between Montréal and Mont-Laurier (Labelle County) to the north. A branch line, the Montfort Colonisation Railroad, ran from the village of Piedmont to the upland parish of Saint-Sauveur; this railroad was later extended westward to Saint-Rémi-d'Amherst (Papineau County) and southward to the Shield-edge community of Saint-Jérôme.¹⁰

The improved transportation system stimulated local industry, particularly sawmilling, in the upland area. It also helped to give birth to the Laurentian tourist industry. After the completion of the Montréal-Saint-Jérôme railroad, holiday excursions to the Laurentians became extremely popular, and a number of summer cottages soon sprang up in the lower valley of the Rivière du Nord. However, it was the village of Sainte-Agathe, located 26 miles north of Saint-Jérôme, which became the first important tourist centre of the upland. A large hotel, the Castel des Monts, was constructed in the village the year after the arrival of the railway; at the same time, English-speaking Montrealers began to erect summer residences on scenic Lac des Sables. The climate of this section of the Laurentians was considered to be particularly healthful and invigorating; as a consequence, nine tuberculosis sanatoria were constructed in the Sainte-Agathe area between 1899 and 1912.

After World War I, the valley of the Rivière du Nord also began to develop as an important recreational area, with the villages of Prévost, Shawbridge, Piedmont, Saint-Sauveur, Val-Morin, Sainte-Marguerite and Val-David all growing into large summer tourist centres. At the same time, skiing was becoming a popular sport in the valley; during the 1920s and 1930s hundreds of miles of ski slopes and trails were cleared in the Shawbridge, Saint-Sauveur, Sainte-Adèle and Sainte-Agathe districts. « L'apparition du ski [provoque] une véritable révolution dans la vie des Laurentides, car il permet de prolonger la saison touristique; ... le ski est à l'origine de l'extraordinaire développement qui se manifeste à partir de 1930 ».¹¹

Until the late 1930s the Laurentian roads were virtually impassable in winter; ski facilities were therefore concentrated almost exclusively along the Canadian National and Canadian Pacific railway lines. The villages of Shaw-

⁹ Labelle died in 1891, one year before the railroad was extended to Sainte-Agathe.

¹⁰ This railroad was later incorporated into the Canadian National Railways system. It was abandoned in 1962.

¹¹ VIAU, Robert, *Le tourisme dans les Laurentides*, p. 30.

bridge and Saint-Sauveur, both located on railroads, were the first Laurentian communities to profit from the « ski boom ». However, just before World War II the government made many improvements to the road network of the Laurentians. This gave an impetus to hotel construction in the area. In the late 1930s, several year-round resorts were opened in the Sainte-Adèle and Sainte-Marguerite areas, and an American promoter constructed a large ski lodge at the foot of Mont-Tremblant. By 1939, there were twenty ski lifts and over a thousand miles of ski trails in the upland area of the county.¹² After the war, however, trail skiing went out of vogue in the Laurentians. The « ski centre », with its sumptuous lodge, long skiable slopes, snowmaking machines, T-bars and chair lifts, is now the principal winter tourist attraction in the region.

In recent years, the waters of the Rivière du Nord have become polluted. As a result, the villages of LeSage, Prévost, Shawbridge, and Piedmont, all located in the lower valley of the Rivière du Nord, have declined in importance as summer tourist centres. At the same time, residential, commercial and recreational land uses have become greatly intensified in the upper Nord river valley, and communities such as Sainte-Adèle, Val-David and Sainte-Agathe are expanding very rapidly. But even in this section of the valley there are a few villages (Val-Morin, Préfontaine and Mont-Rolland) which are not growing at their pre-1941 rate. However, when the Laurentian autoroute¹³ is extended to Sainte-Agathe, the growth of commercial and recreational facilities will be greatly accelerated throughout the entire Nord river area ; this should bring these tiny communities out of their present state of stagnation.

MAPPING THE LAND USE OF TERREBONNE COUNTY

During the last thirty years, great changes have taken place in the land use of the county of Terrebonne : the agricultural landscape has been obliterated or greatly modified, and large tracts of land are now in recreational and other urban land uses. In order to study the changing landscape of the county, the writer carried out a detailed land use survey of the area. The principal data obtained are recorded on a series of distribution maps (Figures VII to XIV). The land use classification used for this survey was devised by research officers of the Geographical Branch, Department of Mines and Technical Surveys, Ottawa ;¹⁴ the writer has slightly modified the Geographical Branch system for the purposes of this study.¹⁵

¹² *Ibid.*, p. 34.

¹³ In December 1963, the Laurentian autoroute extended from Montréal as far north as Saint-Sauveur.

¹⁴ NICHOLSON, N. L., *et al.*, *Canadian land-use mapping*. Canada Dept. of Mines and Technical Surveys, Geographical Paper No. 31, 1961.

¹⁵ The writer has amplified the Geographical Branch pasture category and has totally revised the forest classification. The writer's forest classification is based upon the composition of the stand (coniferous, deciduous, mixed), and not upon density of crown cover (dense woodland, open woodland), as in the Geographical Branch classification.

THE LAND USE CLASSIFICATION

The land use classification used for the writer's field survey is outlined below :

Urban land uses

a. *Commercial areas* — all retail and wholesale establishments ; all commercial service establishments except amusement and recreational establishments (n.b., commercial service establishments include hotels, motels, and tourist and trailer camps).

b. *Industrial areas* — all tracts of land on which a product is extracted, and/or processed, and/or manufactured by mechanical means (n.b., industrial areas include developed power sites ; exploited portions of peat bogs ; quarries ; and clay and sand pits).

c. *Residential areas* — all tracts of land on which are located residences not associated with farm holdings. Seasonal residences (summer cottages, ski cabins) are included in this category.

d. *Associated urban (institutional) areas* — those phenomena which are essentially institutional or which have an institutional connotation (e.g. schools, hospitals, cemeteries, railroad stations, etc.).

e. *Recreational areas* — all tracts of land on which are located recreational facilities, whether privately or publicly owned (e.g. parks, golf courses, race tracks, managed ski slopes, etc.).

Agricultural land uses

a. *Cropland* — includes the following land use categories :

1. horticulture.
2. orchards.
3. hay : — grasses, and/or forage legumes, and/or grass-grain seed mixtures which are cut as a crop sometime during the growing season. Fields which have been cut for hay and then turned to pasture in the same growing season are classified as hayfields.
4. grain : — wheat, oats, barley, rye, mixed grains, buckwheat and field corn.

b. *Pasture* — all grazing and pasture land which does not exhibit evidence of having produced a crop the year of the field survey. The term « pasture » includes three « pasture types » :

1. *improved permanent pasture* — those enclosed fields where intensive controlled pasturing is practised. The turf cover is managed by manuring, by liming, by reseeding, or in other ways. Improved permanent pasture is often found on large dairy farms, experimental farms, and horse and stock breeding farms.

2. *rotational pasture* — those fields which are in pasture the year of the field survey, and yet which seem, because of their association and appearance (e.g., relict ploughing pattern), to be managed in regular rotation with crops. Turf cover is of good quality.

3. *rough pasture* — those tracts of cleared land or natural prairie upon which extensive pasturing or grazing is practised. There is no evidence that these tracts are being managed in rotation with other crops. The pasture generally has a close-cropped appearance.

These three pasture types were differentiated on the 1:50,000 land use map manuscripts of the area, but in Figure VIII they have been grouped as « pasture ».

Grassland, woodland and swamp

a. *Open grassland* — all tracts of land on which grasses, weeds and old hay are the dominant forms of vegetation. Scattered bushes may be present — maximum height four feet.

b. *Scrub grassland* — all tracts of land on which grasses, weeds, old hay and scrub are the dominant forms of vegetation. Scattered bushes and trees are generally over four feet in height. The scrub cover has a greater density than that of *open grassland*.

c. *Scrub woodland* — all tracts of land covered with dense tree scrub. The scrub does not generally exceed twenty feet in height.

d. *Coniferous woodland* — tracts of woodland with trees generally over twenty feet in height, and in which the dominant forest growth is coniferous.

e. *Deciduous woodland* — as in d., but the dominant forest growth is deciduous.

f. *Cut-over or burnt-over areas* — tracts of land on which the forest cover has been burnt or clear-cut.

g. *Swamp and marsh* — those areas of swamp and marsh which do not have a woodland or scrub woodland cover.

During the summer of 1961, the writer undertook a field-by-field survey of the land use of the upland area of Terrebonne county. He mapped some of the urban areas during the autumn of that year. Land use data were recorded directly onto air photographs in the field ; these data were later transferred to 1:50,000 National Topographic System base maps. The base maps were eventually reduced to a scale of 1:125,000. Figures VII to XIV were prepared from the data recorded on the 1:125,000 manuscript maps.

The writer interpreted the land use of the lowland area of Terrebonne from air photographs (scale 1:14,400) taken in 1960. He ran a series of check traverses in the field to test the accuracy of his interpretation. The land use map of the lowland area is not as detailed as that prepared for the upland.

FIGURE V

LAND USE OF THE LOWLAND AREA OF TERREBONNE COUNTY

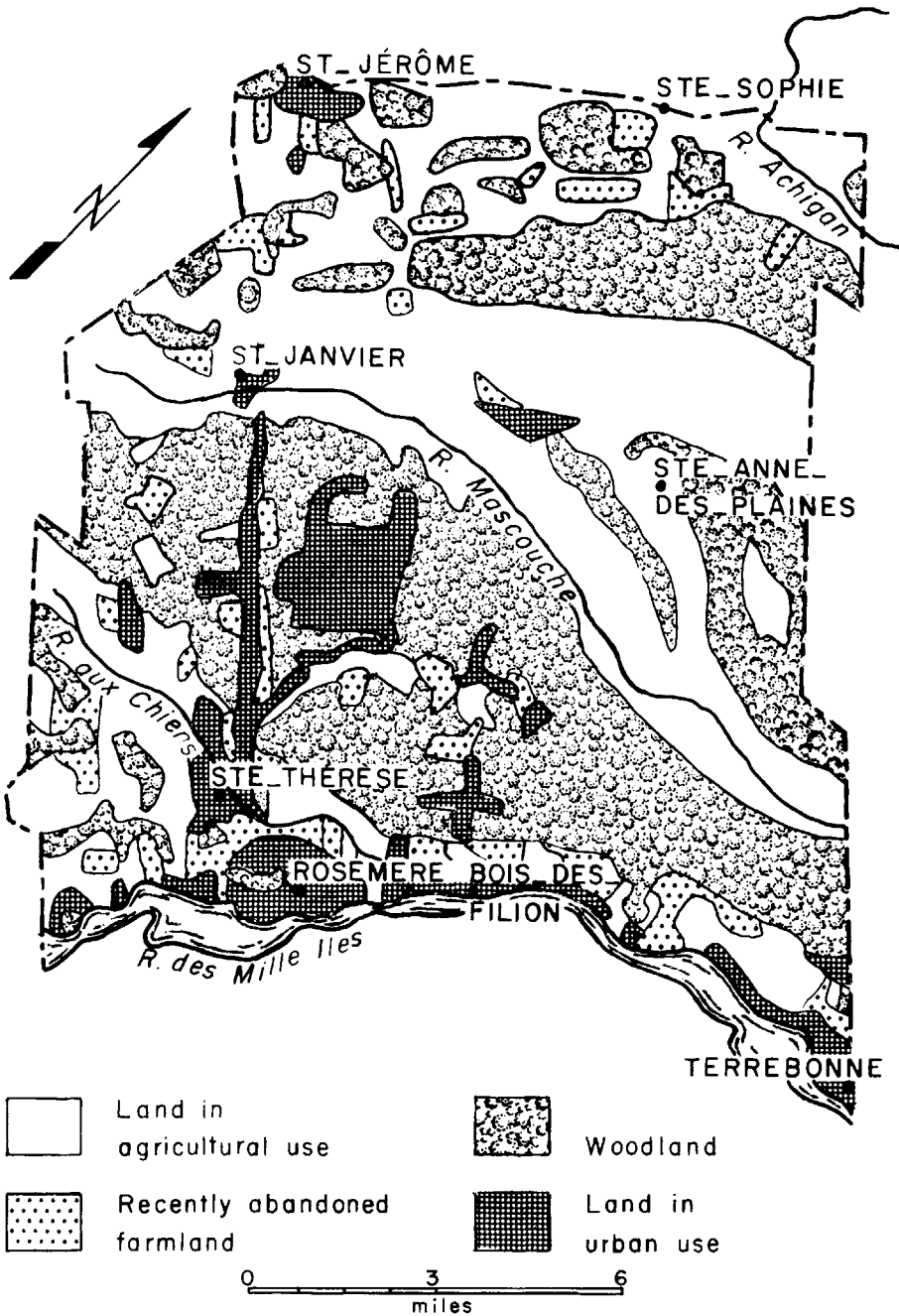
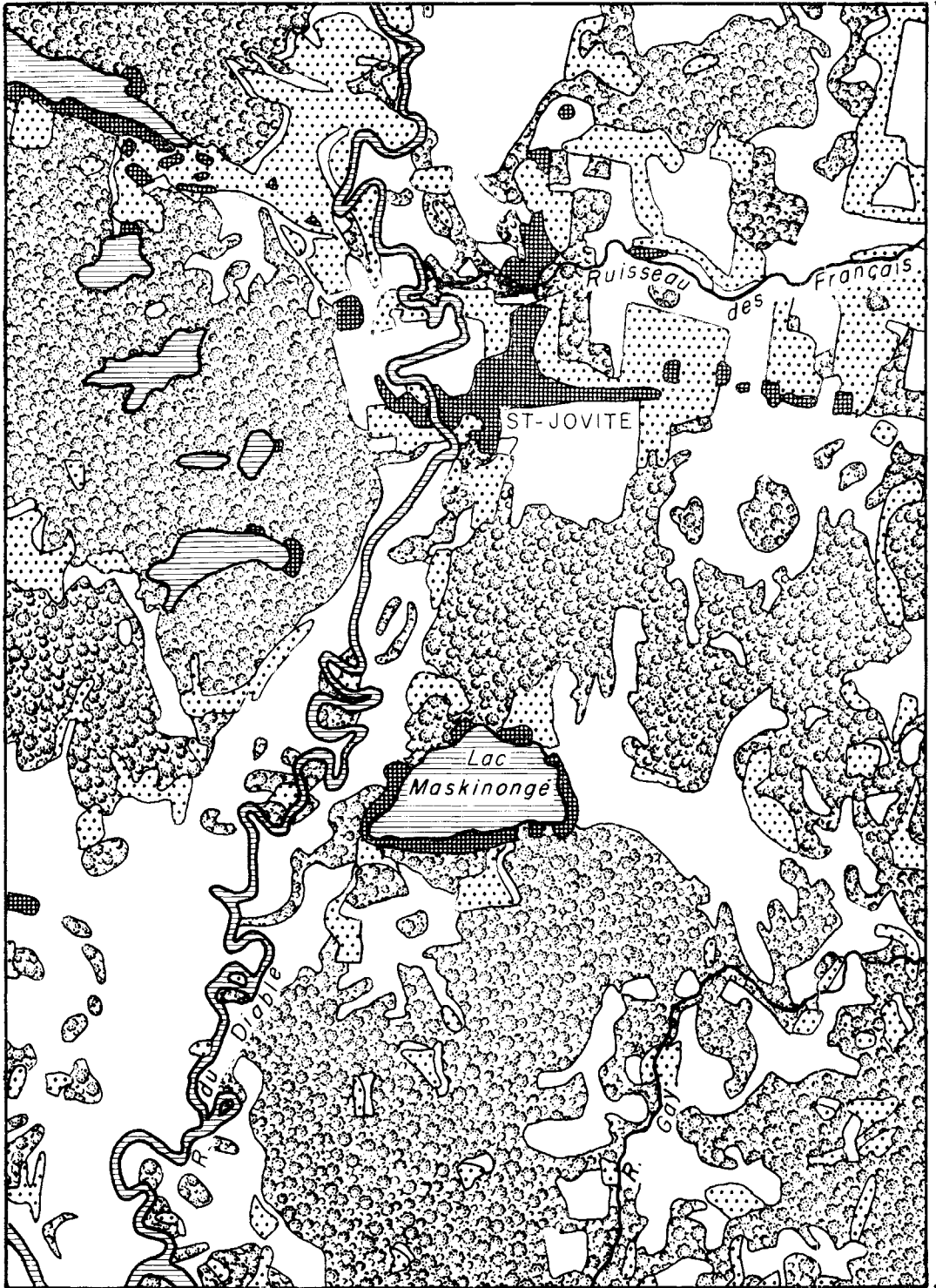


FIGURE VI

46°09'



46°03'
74°33'25"

74°39'

THE PRESENT PATTERN OF LAND USE IN TERREBONNE COUNTY

THE LOWLAND AREA (Figure V)

There are three principal zones of cultivated land in the lowland section of Terrebonne county : the area between the Grand Coteau and the Rivière des Milles Îles ; the valley of the Rivière Mascouche ; and a strip of land

approximately two miles in width bordering the Shield edge. In the first zone, most of the land under cultivation is underlain by soils which have formed on clays, on tills, and on alluvial materials. In the Sainte-Thérèse area, the clay soils support excellent dairy farms and the alluvial soils are used for horticulture, orcharding, and general farming. Tracts of till soils are used for pasturage and for horticulture (mainly early market crops). In 1961, more than 27 per cent of cropland in the Sainte-Thérèse area was in orchards, garden crops, and small fruits. In the Terrebonne area to the east, the clays along the Rivière des Milles Îles are used for general and dairy farming, and for the production of canning crops.

Almost all tracts of cultivated land in the valley of the Rivière Mascouche are underlain by clay soils ; most of this land requires artificial drainage. Dairy and general farming predominate in the Sainte-Anne-des-Plaines section of the valley ; hay, oats, barley, buckwheat, peas, silage corn, clover and timothy are the principal crops. The farms of this area are prosperous, and there has been

almost no land abandonment or sale in the Mascouche valley to date.

In the Shield-edge area, the main tracts of cultivated land are underlain by light alluvial soils. There are large acreages in vegetables and small fruits (56 per cent of all cultivated land in Sainte-Sophie parish in 1961).

Pressure of urban land use has resulted in farm dereliction and land sale in most sections of the lowland area. Since 1946, large acreages of land lying along Route 11 have gone out of cultivation, and, in the last few years, over 90 per cent of the farmland along the new Laurentian autoroute has been bought

LAND USE

in the Saint-Jovite area



Land in urban use



Land in agricultural use



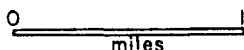
Recently abandoned farmland



Woodland



Lakes and rivers



up by land speculators.¹⁶ Most of the abandoned farmland of the lowland area lies in the zone between the Rivière des Milles Îles and the Grand Coteau. But several large blocks of marginal farmland have also gone out of agricultural use in Sainte-Sophie parish to the north.

Large tracts of woodland are found on the sandy alluvial deposits of the lowland zone of the county. The forest has been thoroughly logged in the past, and is generally of poor quality. It has little economic value.

Much of the lowland area of Terrebonne county is now in urban land use. The area contains four major urban agglomerations: the industrial and transportation centre of Sainte-Thérèse (11,771 pop. in 1961), and the residential communities of Terrebonne (6,207), Rosemère (6,158), and Bois-des-Filion (2,489).

TABLE II

MAJOR LAND USES IN THE UPLAND AREA OF TERREBONNE COUNTY		
MAJOR LAND USES	ACREAGE	ACREAGE AS PERCENTAGE OF TOTAL AREA OF UPLAND
<i>Land in agricultural use</i>		
Cultivated land	13,911.1	3.3
Pasture	8,896.7	2.1
<i>Abandoned farmland</i>		
Open grassland	21,663.9	5.2
Scrub grassland	10,036.7	2.4
Scrub woodland	18,841.8	4.5
<i>Woodland and lakes</i>	327,856.5	78.4
<i>Swamp and marsh</i>	1,490.8	.4
<i>Cut-over or burnt-over areas</i>	1,004.5	.2
<i>Land in urban use</i>		
Industrial use	585.9	.15
Commercial use	705.5	.2
Recreational use	3,870.4	.9
Residential and institutional uses	9,398.9	2.25
TOTAL	418,262.7	100.00

¹⁶ LANGLOIS, Claude, *Problems of urban growth in greater Montréal*. In *Canadian Geographer*, vol. 5, No. 3, p. 8.

The villages of Saint-Janvier, Sainte-Anne-des-Plaines and Sainte-Sophie are local agricultural supply centres which contain a number of small industries.

Thin bands of commercial-residential development flank all the major transportation axes of the area, particularly Route 11 between Rosemère and Saint-Jérôme.

Agricultural land use (Figures VII, VIII)

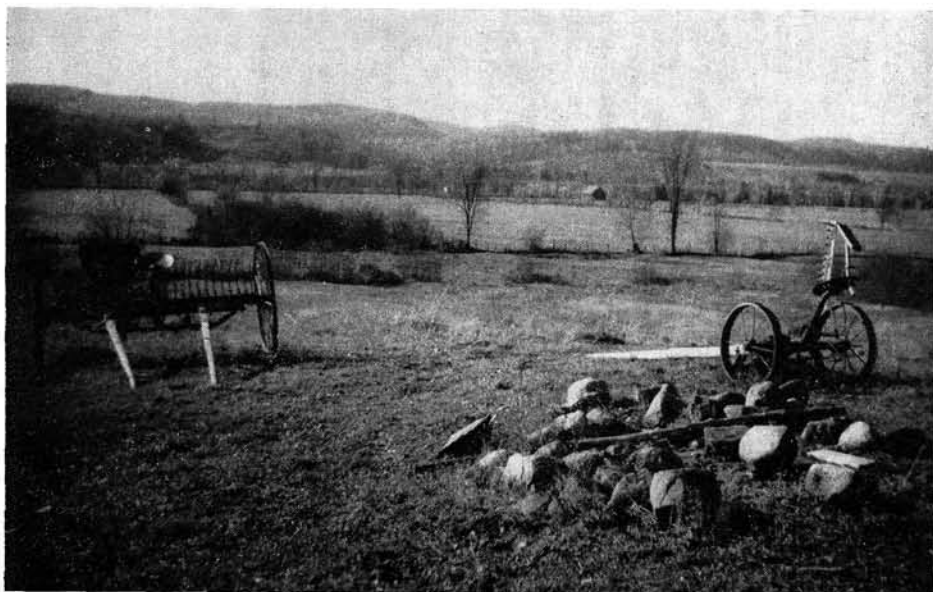
The upland area of Terrebonne county contained 22,808 acres of improved farmland in 1961.¹⁷ Cropland (hay, grain, horticulture) occupied 61 per cent of this farmland; the rest was in pasturage. A total of 41 per cent of the improved farmland is found in two zones: in the valley of the Rivière du Nord between Saint-Jérôme and Sainte-Adèle, and in the Diable-Rouge lowland south of Saint-Jovite. The valley of the Rivière du Nord is floored with fine-grained alluvial deposits upon which have developed well-drained, stone-free soil profiles. The soils are acidic and infertile, but are responsive to good management, especially to liming and to fertilising. Until 1946, almost the entire valley was in farmland; now only a few scattered areas of cultivated land remain. The largest of these areas is found on the west bank of the Rivière du Nord between Saint-Jérôme and Prévost. Here, most of the improved land is in field crops or rotational pasture; the emphasis of the agricultural economy is on dairying. Orchardng was important in the recent past in the Prévost area. This is evidenced by the numerous derelict groves of apple trees found on the valley slopes 200' to 300' above the Rivière du Nord.

A few large dairy farms are found on the east side of the Nord river between LeSage and Shawbridge. Most of these farms are localised on a narrow belt of high-yield, silty loam soils which parallels the river for more than a mile. In the Piedmont area to the north, a few dairy and poultry farms are still in operation; on the east side of the river, a large tract of improved land is worked by inmates of a juvenile correctional institution.

The valleys of the Rivière du Diable and the Rivière Rouge contain the most extensive areas of improved farmland in the upland zone of the county. Most of this land is found in the valley of the Rivière du Diable south of Saint-Jovite (Figure VI). The valley is flat and wide, with maximum relief of 100'. The Diable river meanders widely on the valley floor, and the lowland is spattered with oxbow cutoffs and meander scars. Scrub and swamp vegetation fill most of these cutoffs and scars. The valley is underlain by silts and sandy loams; the soils which have developed on these materials are well-drained, stone-free, permeable, and easy to work. Consequently, almost the entire lowland was cleared for agricultural use. Most of the farmland is used for hay and grain, but potatoes, carrots and other garden crops are cultivated on limed and fertilised tracts. Pastures are found in the valley « bottoms » and on the nearby till-mantled uplands. The farms are generally between 70 and 400 acres in area, and most can be classified as dairy enterprises.

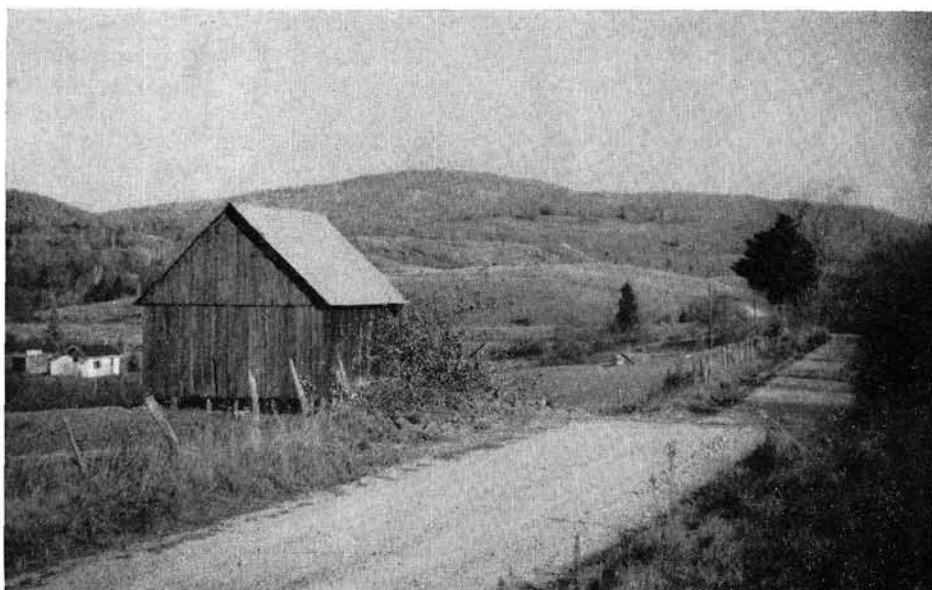
¹⁷ Data derived from planimetric measurement of the writer's land use maps (ms, 1:50,000) of the upland section of Terrebonne county.

PHOTO I



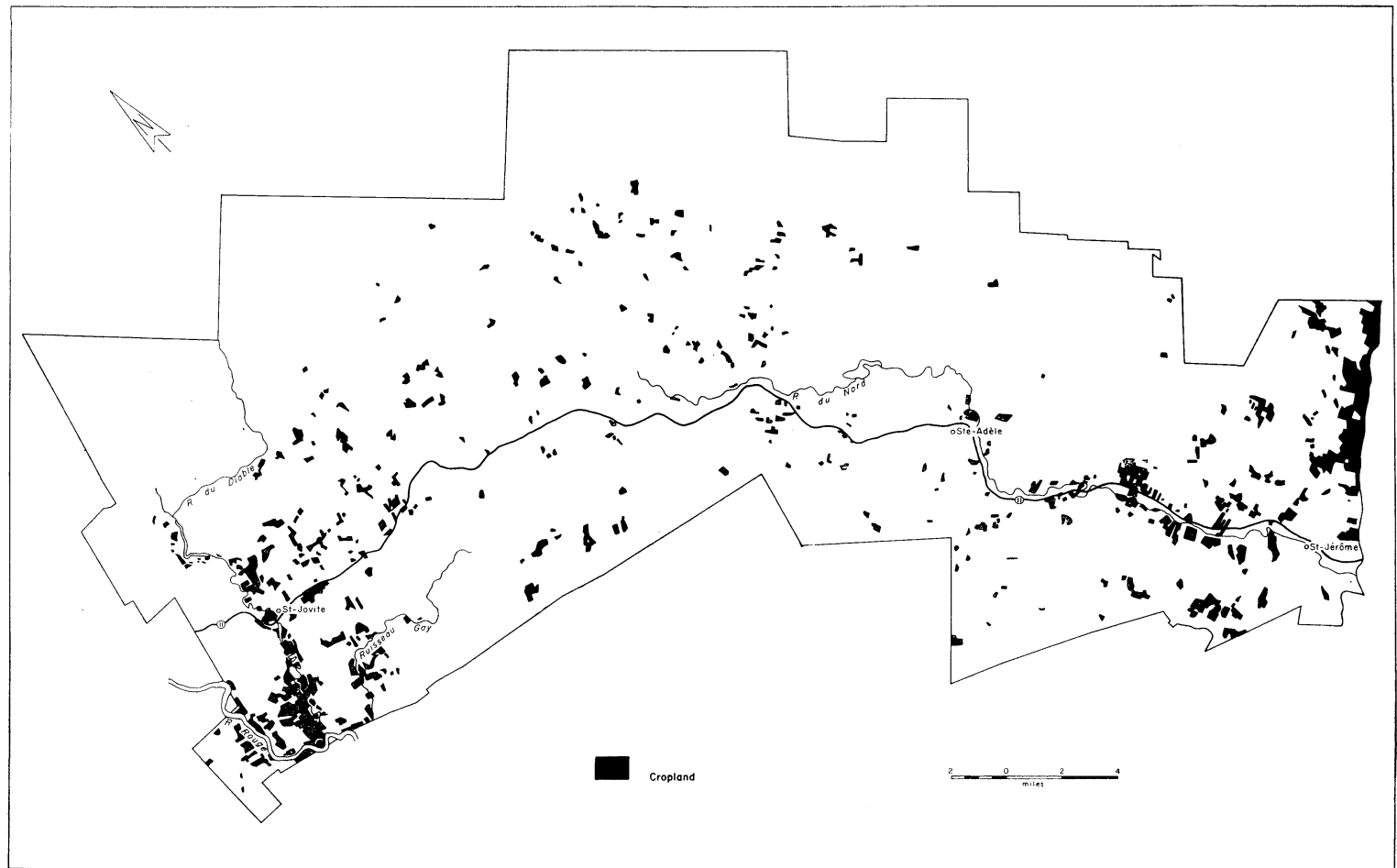
The flat valley lands of the Rivière Rouge, in the northwest corner of Terrebonne county. Note the cut hayfields in the background. The fields are used for pasture after the hay is mowed.

PHOTO II



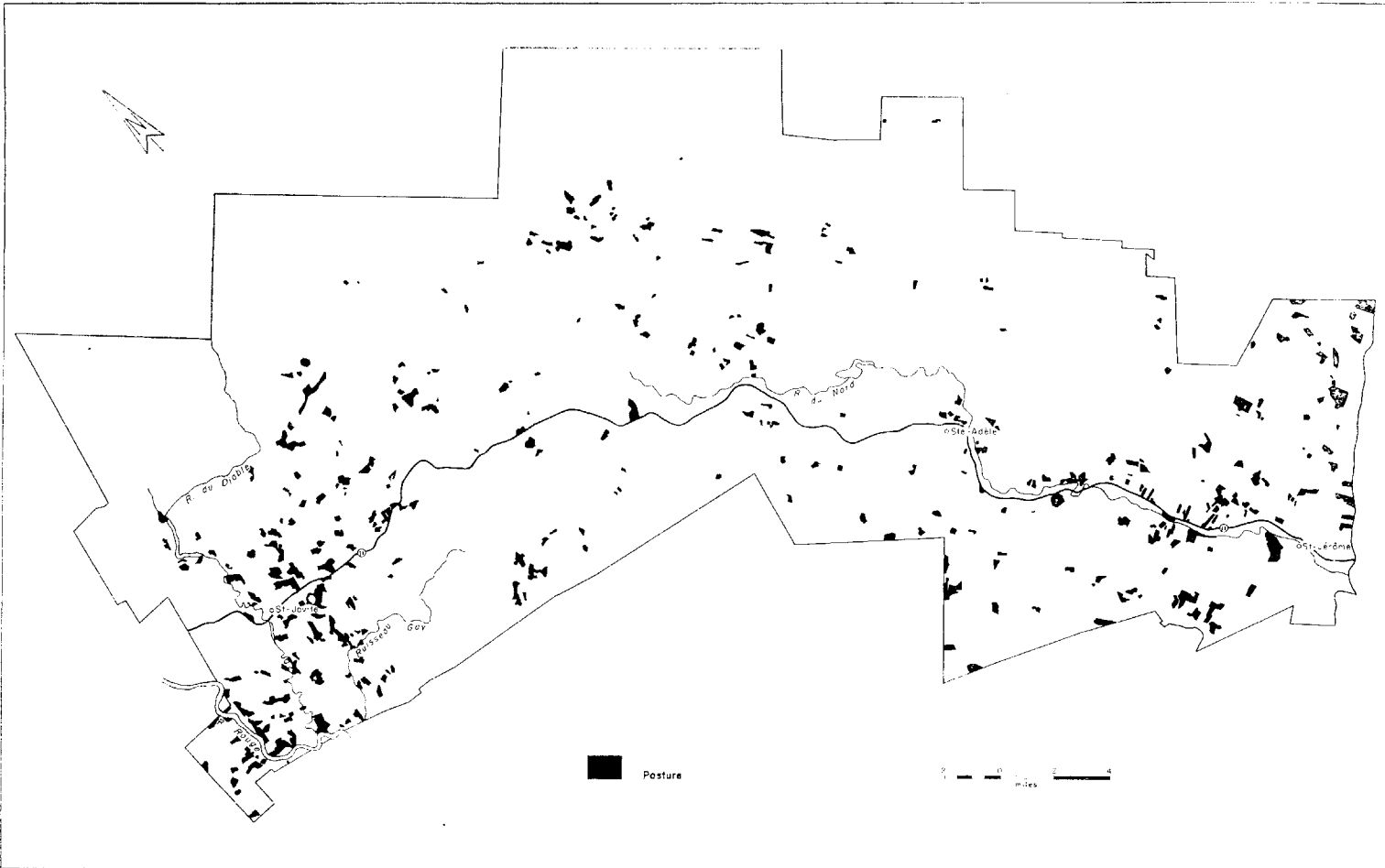
Undulating valley lands of de Salaberry township, Saint-Jovite area. Local soils are derived from fluvio-glacial gravels, and are extremely acidic. Most of the cleared farmland in the area has recently been abandoned.

FIGURE VII



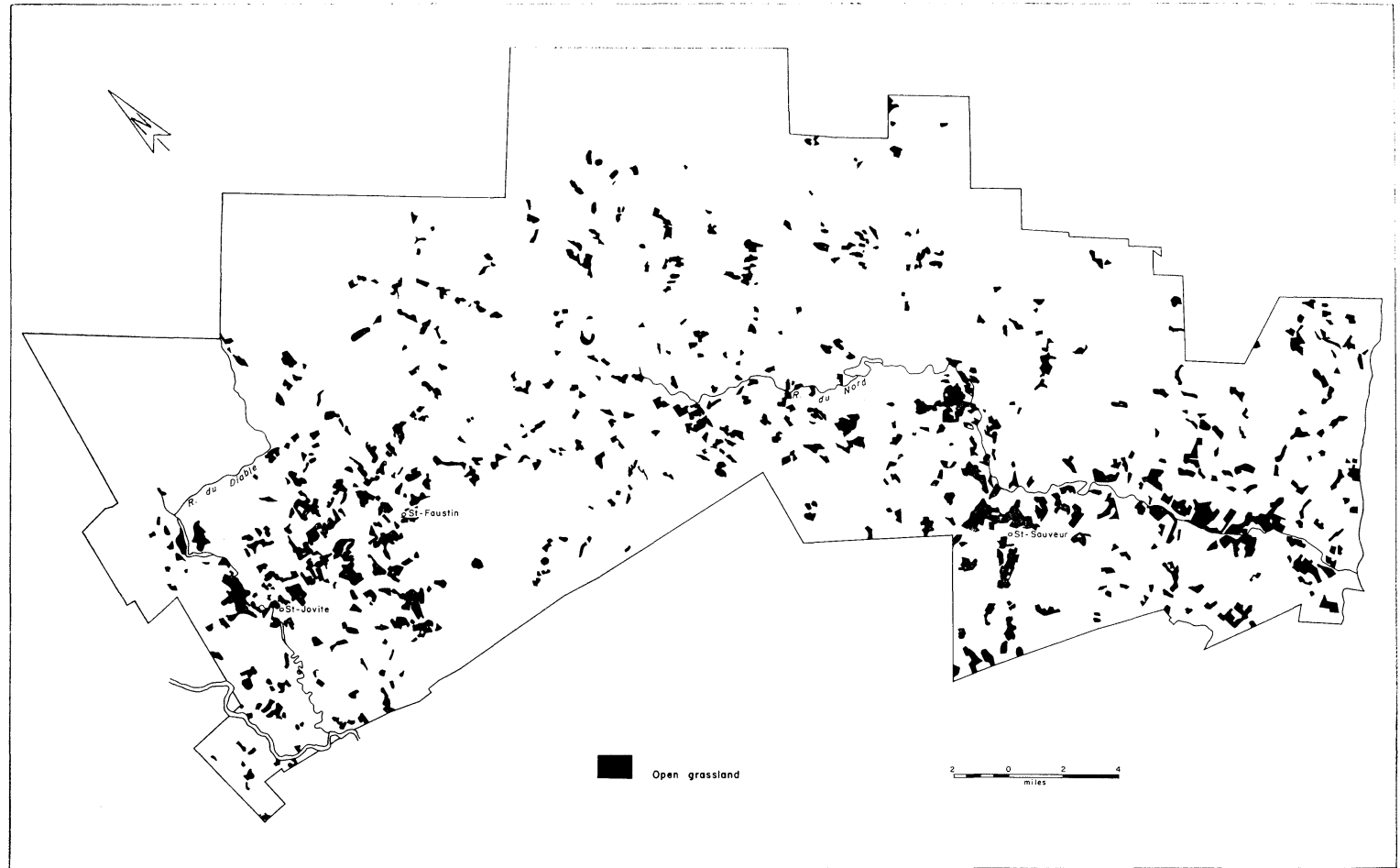
Distribution of cropland in the upland area of Terrebonne county.

FIGURE VIII



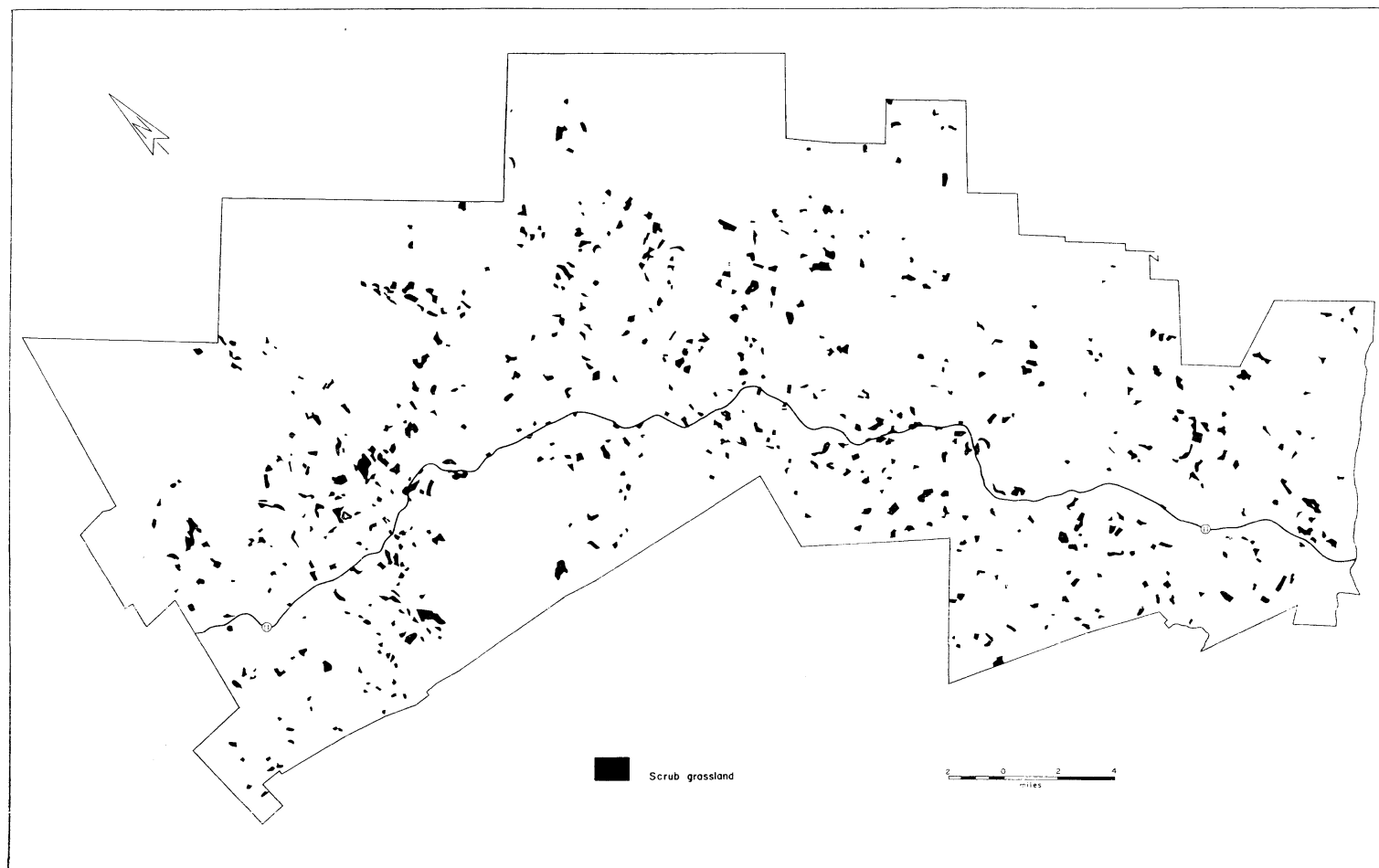
Distribution of pasture in the upland area of Terrebonne county.

FIGURE IX



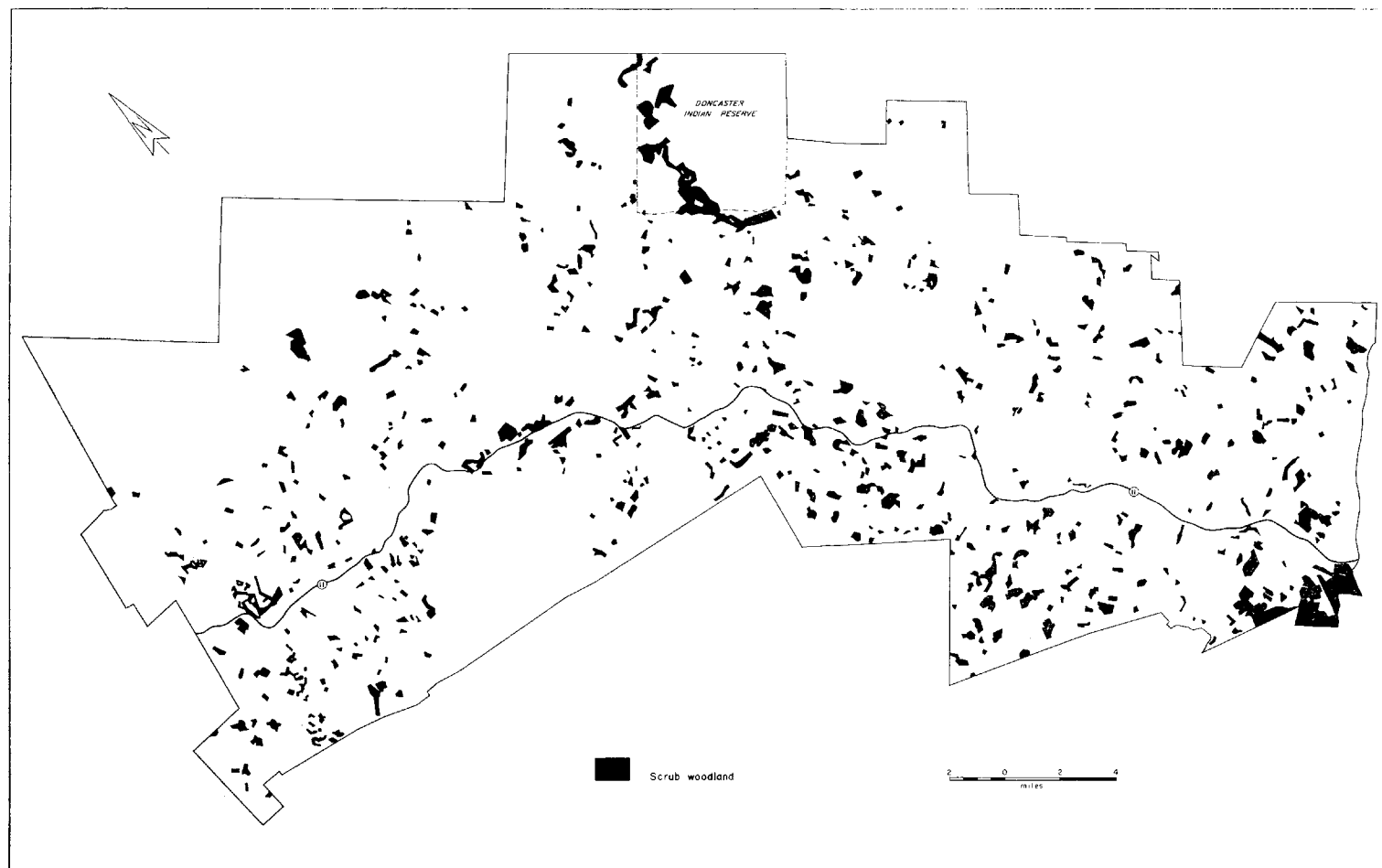
Distribution of open grassland in the upland area of Terrebonne county.

FIGURE X



Distribution of scrub grassland in the upland area of Terrebonne county

FIGURE XI



Distribution of scrub woodland in the upland area of Terrebonne county.

With the exception of the valley lands of the Diable, Rouge and Nord rivers, only very limited areas of the upland zone of Terrebonne county are in agricultural use. As we have seen, rugged terrain and acidic soils are characteristic of most of the area; the growing season is as short as 65 days in some sections of the upland. In spite of the hostile physical environment, a vigorous church-and government-sponsored colonisation program was undertaken here during the second half of the nineteenth century; under this program, colonists cleared extensive tracts of land in even the most rugged sections of the upland. Since 1900, most of this land has been abandoned, reforested, or sold to tourists. In general, the few tracts which remain under cultivation are well-removed from the principal recreational zones of the county. For example, the Ruisseau Gay lowland, located southeast of Saint-Jovite, is a relatively prosperous farming area in which very little land abandonment has taken place (Figure VI). It is a gently rolling area of little relief, underlain by sandy soils. These soils are of limited fertility but are nevertheless well suited to permanent pasture and to the cultivation of potatoes. However, the real reason why farming has survived in the area to date is the total lack of tourist development in the valley.

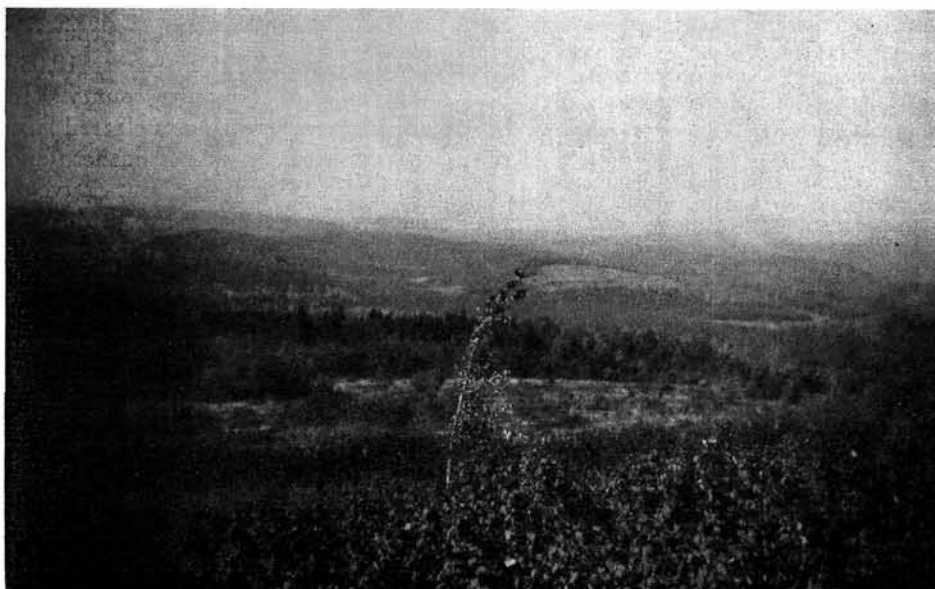
Abandoned farmland (Figures IX, X, XI)

Abandoned farmland includes the land use categories *open grassland*, *scrub grassland*, and *scrub woodland*.¹⁸ Open grassland occupies 21,664 acres in the upland area of Terrebonne county. Most of the fields exhibiting an open grassland vegetal cover (grasses, weeds, old hay, and bushes which generally do not exceed four feet in height) were formerly in farmland and were only withdrawn from agricultural use in very recent years. In many instances, it was pressure of urban land use which triggered the sale or abandonment of farmland in the area. For example, the spectacular growth of the tourist industry since 1946 in the valley of the Rivière du Nord resulted in the sale of most of the valley farms to tourists, entrepreneurs, and land speculators. Large tracts of recently-abandoned farmland are now found almost everywhere in the valley. There is a particularly large acreage of open grassland in the parish of Saint-Sauveur (Figure IX). Many of the lands of Saint-Sauveur parish were cleared for agriculture as early as the 1850s, but they generally yielded poor harvests because of the high acidity and low water retention capacity of their soils. The rapid development of Saint-Sauveur as an important tourist centre has resulted in the abandonment or sale of all but a few acres of this marginal farmland.

Large tracts of open grassland are also found in the Saint-Faustin - Saint-Jovite lowland, and in the valley of the Rivière du Diable between Saint-Jovite and Mont-Tremblant (Figures VI and IX). These areas were cleared for farming during the late XIXth century. Although the soils are stone-free, they are also highly acidic, and require much lime and fertiliser. Most of this farm-

¹⁸ However, these categories do not include *all* areas of abandoned farmland in Terrebonne county. In several of the older parishes (Saint-Sauveur, Sainte-Adèle, Saint-Hippolyte), tall forest growth covers large areas of formerly cultivated land; remnants of stone fences and a few man-made rock piles are the only proof that the land was once in agricultural use.

PHOTO III



The gently rolling upland surface of Doncaster township. Much of this area was cleared for agriculture in the late nineteenth century. Almost all the farms have since been abandoned, and the upland now has a scrub grassland and scrub woodland cover.

PHOTO IV



Degraded forest growth on thin till soils — Sainte-Sophie parish, one mile north of the Shield edge. Note the « triangular » fence which stands astride the outcrop of crystalline rock.

land remained under cultivation until the late 1940s and early 1950s ; at this time, Saint-Faustin and Saint-Jovite began to develop as important summer colonies, and many of the farms were either abandoned or were sold to tourists.

Scrub grassland and scrub woodland (Figures X and XI) cover 10,037 and 18,842 acres respectively in the upland area of Terrebonne county. In general, these cover types represent advanced stages of reversion of cleared land to woodland.¹⁹ Extensive tracts of scrub vegetation occur in the southern and eastern zones of the county, *viz.*, in the parishes of Sainte-Sophie, Saint-Sauveur, Saint-Hippolyte, Sainte-Adèle, Sainte-Marguerite and Sainte-Lucie. Most of this scrub is found on steeply sloping land which is underlain by coarse gravels and by bouldery ground moraine. Cleared for agriculture during the late XIXth century, this land proved to be fit only for poor quality hay and rough sheep pasturage. By the late 1930s, sheep farming had almost disappeared from the upland area, and most of this land was in the process of reverting to forest.

To sum up, then, scrub grassland and scrub woodland are generally found on tracts of cleared land which have been abandoned for some time. In fact, much of this land was withdrawn from agricultural use well before the recent tourist boom in the county. On the other hand, open grassland is found on land which has been abandoned in more recent years. This abandonment has often resulted from pressure of urban land use ; therefore the land being abandoned is not necessarily of poor quality (although in many cases it most certainly is). Consequently, scrub grassland and scrub woodland are better indicators than is open grassland of those areas which are submarginal for agricultural use.

Woodland (Figure XII)

In past years, the forests of the upland area of Terrebonne county were intensively lumbered for pine, spruce and hardwoods. Forest resources are now largely depleted, and in 1957 only 25 square miles of the county were still held in timber limits.²⁰ However, it has been suggested that reforestation projects be undertaken on the abandoned farmland and the cut-over -- burnt-over tracts of the area.²¹ In the adjoining county of Argenteuil, the Canadian International Paper Company has recently launched a major reforestation and woodlot management program. This program will ensure a continuing supply of hardwoods for the C.I.P. pulp mill at Hawkesbury, Ontario.²² In the northern reaches of Terrebonne county, there are several large tracts of derelict farmland which could also be reforested ; for example, the valley of the Rivière Archambault (Figure IV). This area is well-removed from the principal tourist zones

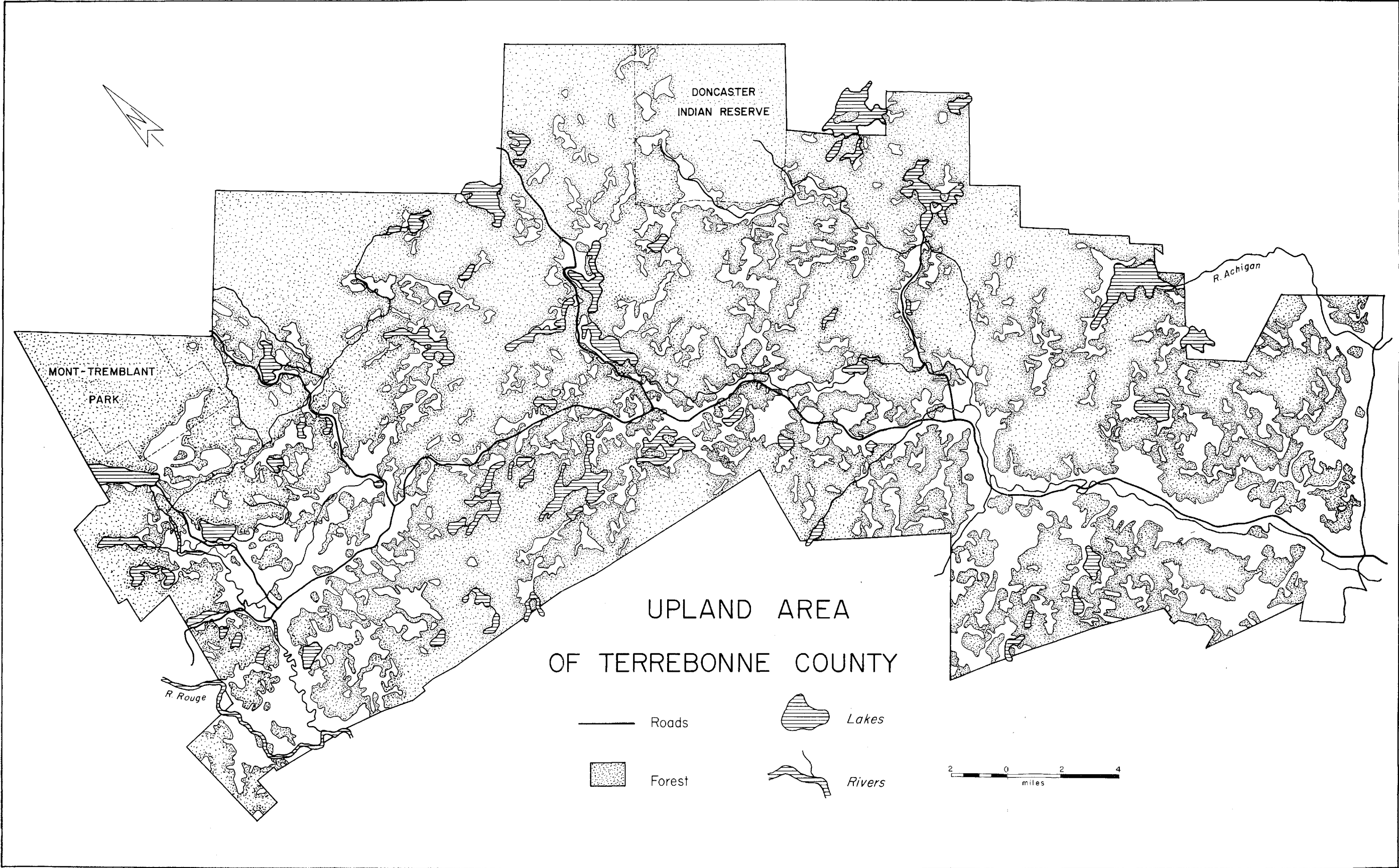
¹⁹ However, some of the scrub woodland cover is second and third forest growth on cut-over and burnt-over lands (e.g., the scrub woodland on the Doncaster Indian Reserve).

²⁰ BENNETT, W. D., *Logging atlas of eastern Canada*. Woodlands Research Index No. 103, Pulp and Paper Research Institute of Canada, Montréal, 1958.

²¹ LADOUCEUR, G., and GRANDTNER, M., *Les terres à reboiser du Québec méridional*. Bull. 4, Laval University Forest Research Foundation, Québec, 1961, 51 p.

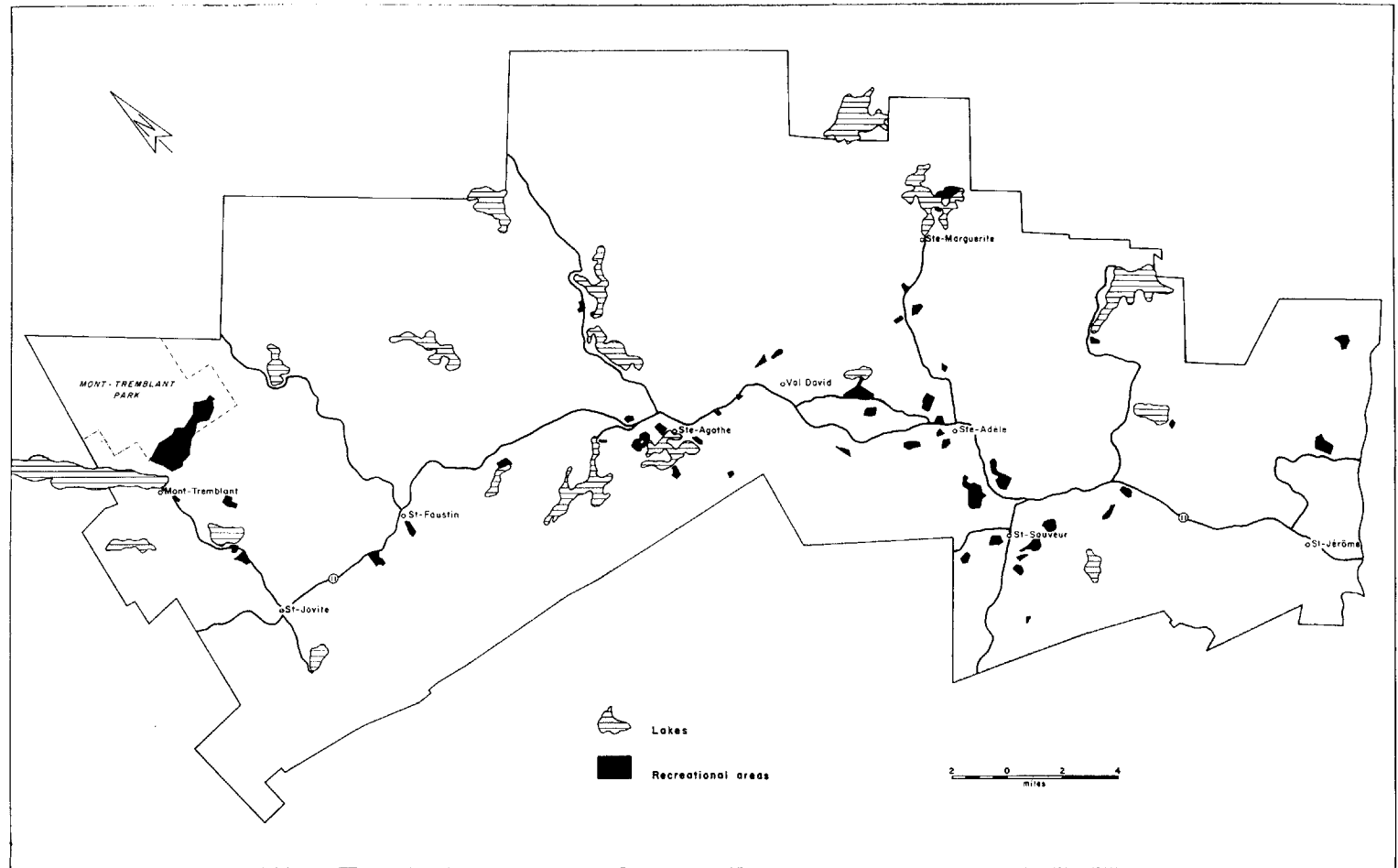
²² JOHNSON, V. E., *Land use in Canada*. Canadian International Paper Company, Montréal, 1959.

FIGURE XII



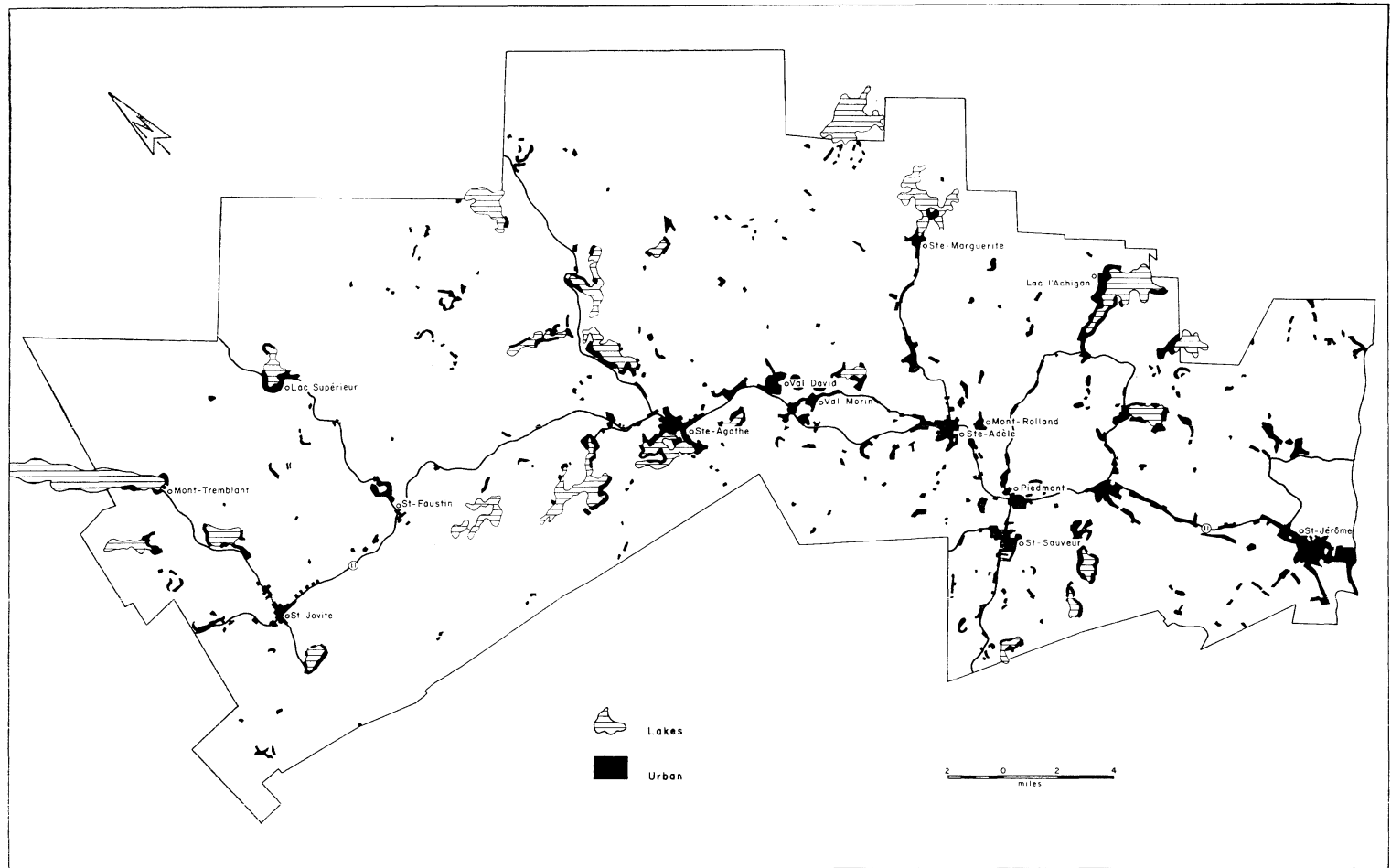
Distribution of woodland in the upland area of Terrebonne county.

FIGURE XIII



Distribution of recreational areas in the upland area of Terrebonne county.

FIGURE XIV

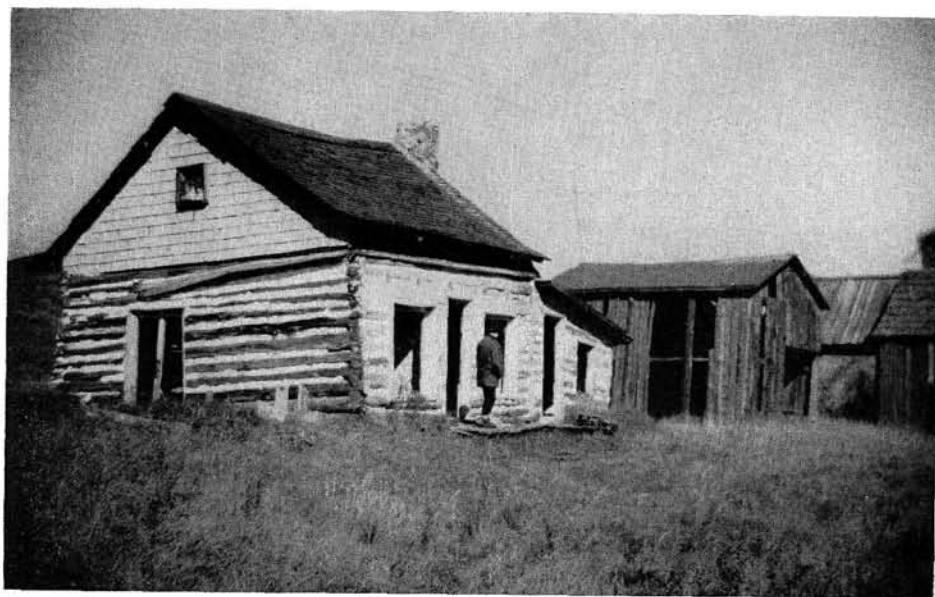


Urban land use in the upland area of Terrebonne county (excluding recreational areas).

PHOTOS V ET VI



Abandoned farmsteads of Terrebonne county.
Upper photo — on Rang 1, Doncaster township, near Val-David. The property has recently been sold to a tourist.



Lower photo — on the Rivière du Diable road, north of Lac Supérieur. The farmhouse is built entirely of white pine.

of the county, and contains large acreages of abandoned farmland. Hardwood plantations established in this area would provide an additional supply of pulpwood for the mill at Hawkesbury.

Land in urban use (Figures XIII, XIV)

Since World War II, the Laurentian area of Terrebonne county has become greatly urbanised ; in 1961, a total of 22.7 square miles, or 3.5 per cent of the total surface of the upland, was in urban land use. The Shield-edge industrial community of Saint-Jérôme and many of the more important upland tourist centres (e.g., Saint-Sauveur, Sainte-Adèle, and Saint-Jovite) have grown very rapidly in recent years ; in addition, commercial, recreational and residential land uses have become greatly intensified along Route 11 and throughout the valley of the Rivière du Nord.

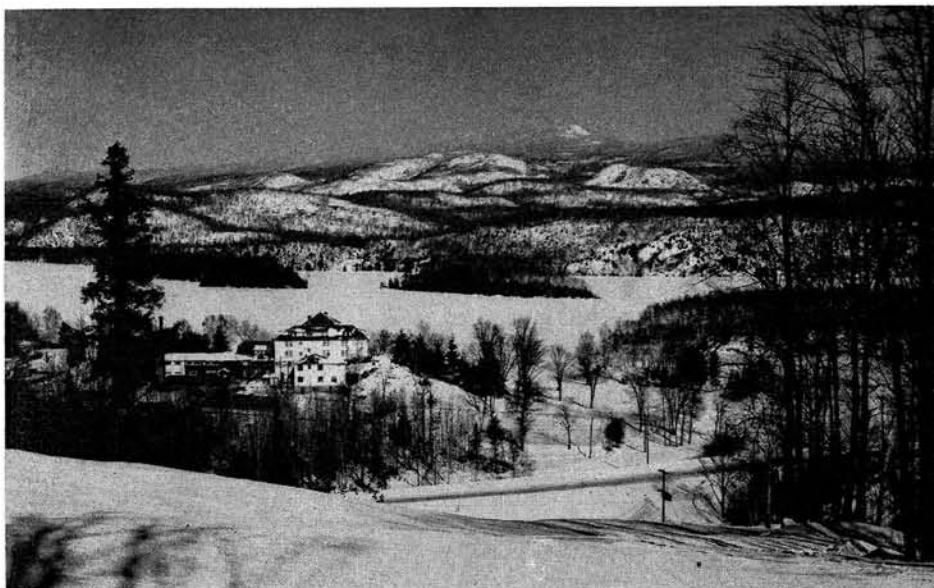
Land in industrial use occupies only 4 per cent of the total urbanised area of the upland. The most important industrial community is the city of Saint-Jérôme. Here there are 61 manufacturing establishments, employing a total of 3,614 workers. Among Saint-Jérôme's largest industries are the Regent Knitting Mills, the Dominion Rubber Company and the Compagnie Rolland (paper manufacturers).

But the upland area contains a number of other industries. On the Rivière du Nord, fourteen miles to the north of Saint-Jérôme, is the large Mont-Rolland paper mill. Constructed in 1904 by the Compagnie Rolland of Saint-Jérôme, the mill employed 50 per cent of the labour force of the village of Mont-Rolland in 1959. The village of Saint-Jovite, located in the northwest sector of the county, has 12 small manufacturing establishments employing a total of 100 workers. Wood processing and the manufacture of wood products are the principal industries ; most of the mills are located northeast of the village, in the valley of the Ruisseau des Français.

Approximately 4.8 per cent of the total urbanised area of the upland was in *commercial land use* in 1961. The tourist service industry is of great importance in the Laurentians ; an almost continuous ribbon of filling stations, restaurants, snack bars and motels lines Route 11 between Saint-Jérôme and Sainte-Agathe. The principal towns and villages of the area contain supermarkets, clothing stores, hotels, restaurants, auberges, pensions, ski shops and a host of commercial service establishments. In addition, scattered throughout the upland area are a large number of year-round resort hotels, such as the 58 room Mont-Gabriel Lodge near Sainte-Adèle ; the sumptuous 116 room l'Esterel hotel near Sainte-Marguerite ; and the 172 room Mont-Tremblant lodge at the southeastern tip of Lac Tremblant.

Land in recreational use occupies 26.6 per cent of the total urbanised area of the upland (Figure XIII). Terrebonne county is the most important ski area of Eastern Canada ; in 1961, there were 49 managed ski slopes in the county, served by a total of 86 ski tows and lifts. The greatest concentration of ski slopes occurs in the Saint-Sauveur - Sainte-Adèle district, but in almost every village of the upland there is at least one managed ski hill. In general, it is the

PHOTO VII



(Canadian Pacific Railway Photo.)

Gray Rocks Inn, a 122 room resort hotel on Lac Ouimet, in the northwest sector of Terrebonne county. Note the small ski slope in the foreground. The view is to the north, and the 3,100' Mont-Tremblant massif is seen in the background.

PHOTO VIII



Cottage development around scenic Lac Supérieur, seven miles north of Saint-Faustin.

large resort hotels such as the Chantecler (Sainte-Adèle), the Chalet Cochand (Sainte-Marguerite), the Mont-Gabriel Lodge and the Mont-Tremblant Lodge which own and operate the more important ski centres.

A large number of golf courses and driving ranges are also found in the upland area ; most of these are located in the valleys of the Nord and Diable rivers.

Over 64.6 per cent of the total urbanised area of the upland is devoted to *residential and institutional land use*. The major built-up zones of the upland are found : (1) in the valley of the Rivière du Nord between Saint-Jérôme and Sainte-Agathe ; (2) along Route 11 ; (3) around the shores of the major lakes of the upland, e.g., Lac des Sables and Lac L'Achigan.

A few of the towns of the upland have fairly sizeable populations (Saint-Jérôme and Sainte-Agathe with 24,329 and 5,716 pop. respectively in 1961). However, many of the built-up areas are composed almost entirely of seasonally vacant dwellings such as summer cottages or ski cabins. Consequently, the year-round population of many Laurentian communities is very small indeed.

There are striking disparities between many of the residential communities of the upland area. The tourist village of Val-Morin, an agglomeration of ramshackle summer cottages on the Rivière du Nord near Sainte-Adèle, contains « la concentration la plus forte de chalets touristiques de toutes les stations des Laurentides... ceux-ci se chiffrent à plus de 900. Notons cependant que la plupart de ces chalets sont d'apparence pauvre... parmi ces 900 chalets seulement 20 sont habitables au cours de l'hiver... tous ces petits chalets sont entassés les uns sur les autres formant des quartiers entiers d'allure piteuse ».²³ But communities such as Chantecler and Sommet Bleu (Sainte-Adèle), ville d'Estérel and the Wexford Estates (Sainte-Marguerite parish), are attractive and well laid out residential developments. The houses are spacious and are surrounded by large grounds. Most of these houses have been winterised. A surprisingly large number of ex-Montrealers have now established permanent residence in these and other communities of the Laurentians ; many commute daily to the city via Route 11 and the Laurentian autoroute.

CONCLUSION

In the last few decades, the land use pattern in Terrebonne county has undergone a great number of changes. In 1921, there were 162,780 acres of improved land in the county ; by 1961, this acreage had declined by 60 per cent to 63,883 acres. Large tracts of farmland have gone out of cultivation in the lowland area, and in the upland, agriculture has all but disappeared. On the other hand, the total area in urban use in the county has increased greatly. Cottages now crowd the lake shores and river banks of the area ; ski lifts are found on most of the larger hills ; snack bars, restaurants and motels spring up almost overnight along Route 11. And what is the future of this area ?

²³ VIAU, p. 176.

In ten years, urban sprawl will no doubt flank Route 11 and the Laurentian autoroute from one end of the county to the other. And 25 to 30 years from now, Greater Montréal will probably spill over from Île Jésus onto the north shore of the Milles Îles river. At least the southern part of the county will then become a part of the vast Montréal urban complex.

ACKNOWLEDGMENTS

The writer would like to thank Dr. Pierre Dagenais, Dean of the Faculty of Letters, Université de Montréal, for his interest in this study and for his valuable suggestions and counsel.

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